



PBI

INTERNATIONAL CABLE

Covering the global business of multichannel delivery systems

Wharf Cable's PPV debut

Road to Hong Kong

EC regs in transition
Asian nets blossom in U.K.

December 1994

台揚科技有線電視系統設備

MTI CATV System Equipment

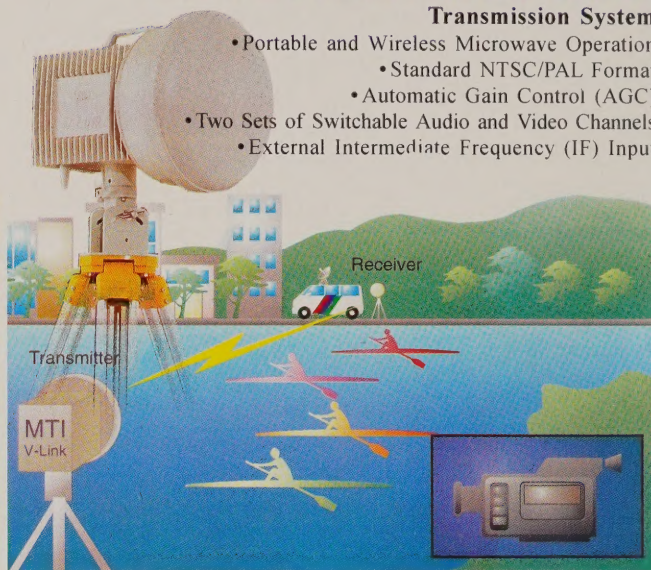
Multichannel Microwave Video Link System

- 72 Television Channels
- Pilot Tone Added for Phase Locking
- Modular Architecture
- Low Power Consumption
- Reliable Frequency Stability



SK3021 V-Link Portable Video/Audio Microwave Transmission System

- Portable and Wireless Microwave Operation
- Standard NTSC/PAL Format
- Automatic Gain Control (AGC)
- Two Sets of Switchable Audio and Video Channels
- External Intermediate Frequency (IF) Input



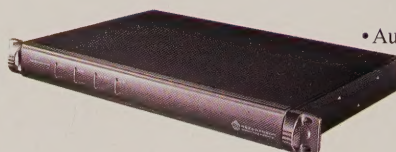
RX2500 Satellite Receiver

- Frequency Synthesized Tuning in 100 KHz Steps
- 27 or 18 MHz IF Bandwidth Selectable
- Normal or Narrow Video Bandwidth Selectable
- Normal or Inverted Video Selectable
- Video Monitor/Test Port Provided
- Two Audio Channels with Independent Frequency Selection



TX3113 Digital Multi-Standard Converter

- 8 System Input Automatically Select
- Standard NTSC or PAL Output Switchable
- Automatic Color Control (ACC)
- Comb Filter Y/C Separator
- 4 Field Interpolation DSP



MK9241 Agile Television Modulator

- Frequency Agile from 48.25 to 543.25 MHz
- Adjacent Channel
- SAW Filter
- Monitor/Test Port Provided
- Composite Intermediate Frequency (IF) Loop
- Front Panel Access to All Adjustable Control



TX3115 Digital Multi-Standard Converter

- 8 System Input Automatically Select
- Standard NTSC or PAL Output Switchable
- Time Base Correction Function
- Comb Filter Y/C Separator
- Composite and S-Video Input/Output
- Genlock Capable



AL9501 Mini-Trunk Amplifier

- Operation Up to 550 MHz
- Push-Pull and Power Doubling
- Full, High and Low Band Slope Control
- Manual/Automatic Gain Control
- Switching Power Supply (24~80 Vac)
- Temperature Compensation



TB5111 Digital Time Base Converter

- 6 System Input Automatically Select
- Chroma, Hue, SCH Level Manual/Auto Remote Control
- Comb Filter Y/C Separator
- Composite and S-Video Input/Output
- Genlock Capable



合揚科技股份有限公司
MICROELECTRONICS TECHNOLOGY INC.

No. 1 Innovation Road II, Hsinchu Science Based Industrial Park
Hsinchu 300, Taiwan,
Tel: 886-35-773-335, 773-390 Telex: 32386 MICTECH
Fax: 886-35-777-121, 770-936

Meeting The Worldwide Demand For Excellence



The introduction of unique MC² coaxial cable by Trilogy Communications clearly opened a new era of excellence in CATV development and construction. Trilogy proved that an air-dielectric cable could be designed to maintain a 93% velocity of propagation, while assuring greater strength and flexibility than traditional foamcore cable. The 100% bonding and hermetically-sealed compartments of MC² reduce moisture ingress and migration to the lowest incidence and degree ever encountered in the field.

To date, over 1.5 billion feet of MC² have been installed worldwide.

The 93% velocity of propagation and superior attenuation of MC² provide much more than the purest signals over the longest distances. MC² provides great savings as well: about 20% fewer amplifiers; less cable waste over long distances; use of one size smaller than would be required for foamed trunk and feeder, meaning more cables per duct, longer lengths per reel — with 30% less shipping weight than foam.

Whatever your drop cable requirements may be, Trilogy's "Total Quality" manufacturing program assures the highest levels of performance and durability.

And the Trilogy tradition of excellence continues straight through to service and delivery, with the absolute best guarantees in the CATV industry.

From innovation to installation and beyond, Trilogy greets the world with the confidence of a true leader.

Sending The Right Signal



Trilogy 
COMMUNICATIONS INC.

Call or write for free sample and brochure: Trilogy Communications, Inc.,
2910 Highway 80 East, Pearl, MS 39208 (601) 932-4461 Fax (601) 939-6637

Reader Service Number 3.

CONTENTS

Departments

From the Editor 6

News 8

Joint venture creates
Europe's largest cable
operator, more.

From Canada 86

Cable companies can
now offer local telephone
service.

**Business/
Classifieds** 89

Products 93

Ad Index 94

Calendar 94

Cover

Photo of Hong Kong
Harbor © Stock Imagery.



Hong Kong PPV 12



Tongasat 18



Asian TV 26

Spain pay television profile

Current TV households: 12,000,000
Cable subscribers: 700,000
DTH subscribers: 115,000
Canal Plus subscribers: 850,000
Source: InterScope Communications

Iberica Link '94 54

Features

Hong Kong PPV 12

Wharf Cable opens its
pay-per-view service.

Tongasat 18

How a little Pacific Island
nation became a satellite
giant.

Asian TV 26

A profile of Asian TV
channels in the U.K.

India 32

Producing programming
for India's masses.

USA Latina 36

USA Networks introduces
a channel for the Latin
American market.

**European
regulations** 40

The regulatory chal-
lenges facing a
Europe without frontiers.

Encom 50

A success story in
the U.K.

Iberica Link '94 54

Conference highlights
pay TV in Spain and
Portugal.

**International
telephony** 60

Offering telephone
services, cable style.

DirecTv 64

Is the CRTC on the
verge of allowing DirecTv
into Canada?

MPEG 66

A European perspective
on video compression.

European digital 74

The race to offer digital
transmission services is
on.

Interactive TV 80

In the search for interac-
tivity, technology isn't the
only hurdle.



CATV/SMATV

TRANS ELECTRIC has over 20 years experience in CATV technology, and is the leading manufacturer in Taiwan.

CATV MODULATOR

NTSC/PAL/SECAM (Adjacent Channel Design)



CABLE TV CONVERTER

NTSC 76/88 Channel PAL B 50 Channel
SECAM 60 Channel



550 MHz/450MHz/300MHz CATV AMPLIFIER



TA-280



CA-300/CA-500

有線電視全套設備及技術服務

We provide HEADEND/TRUNK-LINE/DISTRIBUTION/
SUBSCRIBER Equipment with Engineering Support
and Complete Service.



TRANS ELECTRIC CO., LTD.

P.O.BOX 18 Changhua, Taiwan,

TEL: 886-4-7633361 • 7627019

FAX: 886-4-7627018

TELEX: 51230 TECL

U.S.A. OFFICE

TEL: 1-908-5660361

FAX: 1-908-5663777

The global beat: A compass for the cognoscenti

Greetings and welcome to the December edition of *International Cable*. I join the magazine at a time when the business — call it cable, satellite, telecommunications or megalomedia — has become a truly global proposition. People, companies and issues worldwide are growing progressively more interconnected through a widening skein of partnerships and areas of mutual interest. To view and understand a world chart of who owns whom, with interests in what and franchises where today, is like trying to keep track of whom the Borgias slept with (or murdered) toward the end of the 15th century.

As this issue goes to print, the industry is gearing up for three critical and concurrent expositions, the Western Cable Show in Anaheim, California, and the side by side Cable & Satellite TV Summit and MIP Asia, both in Hong Kong. Again this year, *International Cable* hosts the International Lounge at the Western Show, a place for overseas guests to relax, do business and renew old friendships. Be it in Southern California or south China, however, attendees will be converging on these two conferences to view and hear about the most recent technical, programming and marketing developments, listen to the visionaries and the would-bes and most likely make some deals that will significantly impact the telecommunications landscape for years to come.

International Cable is designed to be the road map to this new and changing terrain. Each month our goal will be to bring you stories to inform and entertain you as you navigate the global electronic highway. We'll be expanding our number of



international contributors as well as our areas of interest in the months ahead, to bring you the entrepreneurs, companies, products and delivery methods charting the telecommunications future. In addition, we'll provide analysis of the cultural, competitive, technical and regulatory conditions governing the speed at which that future is deployed. In short, we hope to help you succeed in business.

After 20 years in the "cable" business, from running a small cable system where public relations was a case of Johnny Walker at the holidays, to high-end video production, to 13 years at one of the world's leading suppliers of network programming, I'm thrilled to be joining the team of professionals at *International Cable* and its family of media-related publications at Phillips Business Information. We look forward to bringing you a good monthly read on the state of global telecommunications.

Alex Swan
Editor



INTERNATIONAL CABLE

A CT Publications Product

Editor, Alex Swan
Editorial Director, Toni I. Barnett
Executive Editor, Wayne H. Lasley
Managing Editor, Shelley L. Ollig
Associate Editor, Laura K. Hamilton
Assistant Editor, Eric Butterfield
Senior Technical Editor, Ronald J. Hranac
Special Correspondent, George Lawton
Editorial Consultant, Tom H. Hall

Publisher, Paul R. Levine
Associate Publisher, Bill Parker

Account Executives
Mike Elmer, (303) 837-8601, ext. 233
Tim Hermes, (301) 340-7788, ext. 2004
Barbara Miller, (303) 837-8601, ext. 213
Joe Rosone, (301) 340-7788, ext. 2028
Classified Sales Manager
Rebekah Markheim, (303) 837-8601, ext. 204

Director of Marketing, Nancy Umberger
Marketing Manager, Gail Stouffer
Executive Assistant, Cynthia Tandy
Administrative Assistant, Cathy Sabo

Director of Operations, Barbara Hill Bink
Production Director, Maria Sullivan
Advertising Coordinator, Ethan Avery
Circulation Manager, Maxine Minar
Subscription/Client Services (800) 777-5006

CT Publications Corp.

A division of Phillips Business Information Inc.
U.S. Sales/Editorial Office
1900 Grant Street, Suite 720, Denver, CO 80203 USA
Tel: (303) 839-1565 Fax: (303) 839-1564

Editorial Bureaus

South America: John Shackelford and Jonathan Baker
Alameda Casa Branca 1143/122
Sao Paulo, SP Brasil CEP 01408
Tel: (55) 11-280-6793 Fax: (55) 11-881-7162

Pacific Rim: Jack Chang

1-18, 7th Floor
Taichung Kang Road, Sec. 2
Taichung, Taiwan
Tel: 886-4-329-0930 Fax: 886-4-329-0925

Advertising Representative

Taiwan, Hong Kong and Singapore
Hiram Lai, ACE Media Agency Co. Ltd.
Rm. 1, 6th Fl., No. 5, Sec. 1
Pa-Te Rd., Taipei, Taiwan
Tel: 886-2-395-0037 Fax: 886-2-394-1726

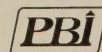
Contributing Authors

James Careless
Lore Devra Levin Coy, Associated Asia
George Lawton
Rick Mendosa
Margaret Popper, *European Media Business & Finance*
Bruce Randall, NTL
Philippe Olivier Rousseau, Conseil Supérieur de l'Audioprovisuel
Robert Smith, Interscope Communications
Stewart Wittering

Corporate Offices

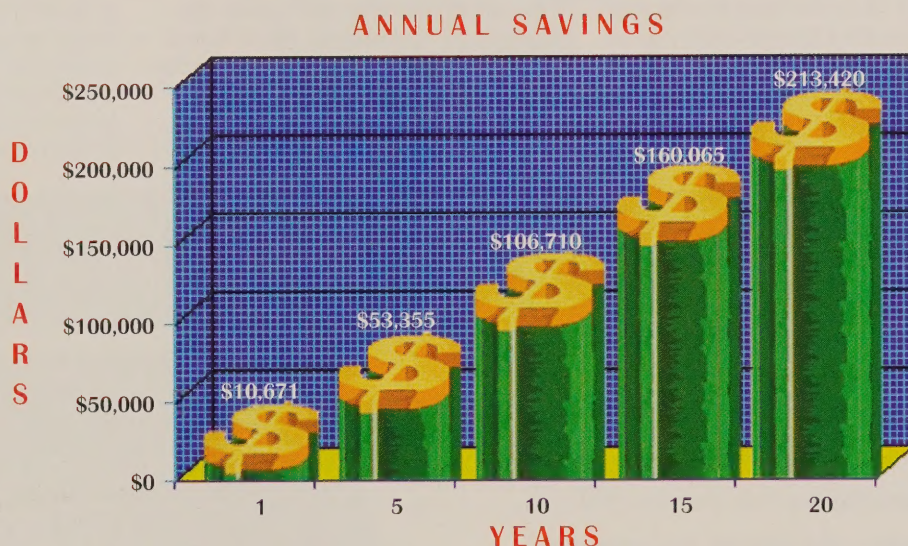
Phillips Business Information Inc.
1201 Seven Locks Road, Suite 300, Potomac MD 20854 USA
Tel: (301) 340-1520 Fax: (301) 340-0542

David J. Durham, Senior Vice President/Group Publisher
Thomas C. Thompson, President
Phillips Business Information Inc.
Thomas L. Phillips, President
Phillips Publishing International Inc.

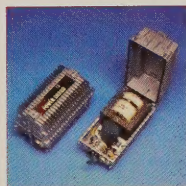


Build Today... Save Tomorrow!

- Power by Design is a function of power supply efficiency
- Power supplies operate more efficiently when loaded to their maximum output rating
- To achieve maximum performance Power Guard offers interchangeable power modules in 3, 6, 9, 12, and 15 amp ratings
- This variety allows you to maximize your power supply efficiency and to save money



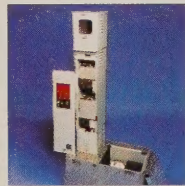
The information in the chart shown above has been based upon 90% efficient power supplies. The average annual savings is \$35.57 per power supply times 300 power supplies in the system with an average kilowatt per hour cost of \$.12.



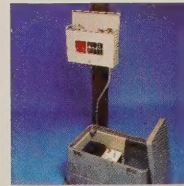
PC-6015-0



FLP-6015-0



SLE-6015-36-S1



SLLP-6015-36-S1



SLP-6015-36-S1

Call 1-800-288-1507 for a free Power by Design package which includes a software program to analyze your current powering requirements.



POWER GUARDTM

A n A N T E C C o m p a n y

Reader Service Number 5

Joint venture creates Europe's largest cable op

Philips Media, the New York, U.S.A.-based multimedia software and services unit of Dutch electronics giant Philips, and United International Holdings Inc. (UIH) of Denver, Colorado, U.S.A., announced they have signed the final agreement for the formation of a joint venture to develop and run multichannel cable TV operations in Europe. According to their initial statement of February 1994, both companies intend to contribute their existing European cable TV activities to the new entity, in which each will maintain a 50% share.

Completion of this transaction is subject to obtaining the necessary consents and approvals and is anticipated for first quarter 1995. Upon its formation, the joint venture will be the largest privately owned cable TV operator in Europe, according to the companies, having representation in 12 countries throughout the continent and in Israel.

Philips Media is set to contribute to the venture its businesses in Germany, The Netherlands, Belgium, France and Austria. UIH will contribute its businesses in Norway, Sweden, Ireland, Hungary, Malta, the Czech Republic, Spain and Israel. At its inception, the company will have a subscriber base of more than 1.5 million out of the 2.5 million homes currently passed by its systems in Europe.

S-A enters Bulgaria

Scientific-Atlanta Inc. was selected by Union Television to design, supply and support complete cable TV systems for 14 newly licensed cities and towns in Bulgaria. Union Television is a rapidly growing private telecommunications company that, according to the company, is becoming the largest cable operator in Bulgaria.

As part of its privatization efforts, the Bulgarian government has issued licenses to Union Television for the construction of local cable systems in communities ranging from under 10,000 to more than 340,000 people. The 14 systems could

serve more than 1 million residents in about 400,000 homes passed. The country, with a population of approximately 8 million people, has an estimated 2.5 million homes that could receive cable service.

Based upon the agreement between the two companies, the majority of the 14 communities will receive cable service within the next two years. The value of the contract was not disclosed.

The new cable systems, which will initially offer basic cable service, are being designed by Union Television with the assistance of S-A to eventually be 750 MHz two-way systems. Planned offerings include pay-per-view, telephony over cable, security alarm, banking and other data and interactive services.

First Pacific Networks Inc. announced that Fujitsu Ltd. and Tomen Corp. selected its FPN 1000i system to provide trial telephone service to 300 residences on Yokohama TV Corp.'s 11,000-subscriber hybrid fiber/coax network. This installation will mark the first residential deployment of telephony-over-cable in Japan.

Digital Video Mixer

- Four-input switcher
- Video mixer
- Cut, wipe, or dissolve between any of 4 inputs
- Dual-Field time base corrector (TBC)
- Preview all 4 inputs on a single monitor
- Chroma key feature superimposes one video image over another
- Over 200 digital effects, including flip, freeze frame, mosaic, and much more
- Broadcast quality video
- Hi8/S-VHS compatible
- Breakthrough price



Model MX-1

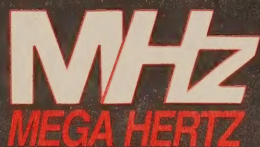
Available In NTSC & PAL



DIGICOMM
INTERNATIONAL, INC.

14 Inverness Drive East, Suite A124 • Englewood, CO 80112 USA
Tel: 303-799-3444 • Fax: 303-799-9366

**Let the MX-1 Take Control of All
Your Production Requirements.**



Established 1975

WORLDWIDE DISTRIBUTION



Established 1975

"Unique" Products for the 21st Century

- ANTENNAS
- CABLE
- CHARACTER GENERATORS
- COMMERCIAL INSERTION
- CONNECTORS/HEAT SHRINK
- CONVERTERS

- DISTRIBUTION AMPLIFIERS
- EMERGENCY ALERT
- FIBER PRODUCTS
- GENERATORS/INVERTERS
- HEADEND ELECTRONICS
- PEDESTALS

- POWER SUPPLIES
- SATELLITE ELECTRONICS
- STEREO/FM PROCESSORS
- TEST EQUIPMENT
- TRAPS/FILTERS
- VIDEO PRODUCTS

RESERVE YOUR 1995 MEGA HERTZ CATALOG, CALL OR FAX TODAY!!!

DENVER ST. LOUIS ATLANTA
FAX: 303-779-1749 303-779-1717
800-525-8386

WE ARE SEEKING ASSOCIATIONS WITH INTERNATIONAL DISTRIBUTORS OR REPRESENTATIVES

IC12/94

INTERNATIONAL CABLE

Our New Address:

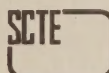
1900 Grant Street, Suite 720 • Denver, CO USA 80203

MEMBERSHIP APPLICATION

APPLYING FOR: ☐ INDIVIDUAL @ \$40* ☐ SUSTAINING @ \$250*

Please print or type information. Data will be used exactly as it is submitted here.

Make check payable to SCTE.
Mail to:



SCTE
669 Exton Commons
Exton, PA 19341 USA

☐ I hereby apply for membership in the Society of Cable Television Engineers, Inc., and agree to abide by its bylaws. Additional member material will be mail to me within 45 days. Payment in the U.S. funds is enclosed. I understand dues are billed annually.

☐ Please send me further information on the Society of Cable Television Engineers.

SCTE is a 501 (c) (6) non-profit professional membership organization. Your dues may be tax deductible. Consult your local IRS office or your tax advisor.

☐ MR. ☐ MRS. ☐ MS. TITLE: _____

NAME: _____ TEL. # _____
First Initial Last Include Area Code

EMPLOYER: _____ FAX # _____
Company Name Include Area Code

CO. ADDRESS: _____
Street/PO City State/Country ZIP

USE HOME ADDRESS? _____
Street/PO City State/Country ZIP

YOUR SIGNATURE: _____ DATE _____

Complete the information. Enclose full payment or charge to MasterCard/Visa shown below.

NAME ON CARD: _____ EXP.: _____

MASTERCARD NO.: _____

VISA NO.: _____

SIGNATURE FOR CHARGE AUTHORITY: _____

Application without payment will be returned.

*Applications from outside U.S., enclose additional \$20 (U.S.) to cover mailing expenses.

☐ I am also an SCTE Installer Member. My Member Number is # _____

*** SPONSORING CHAPTER OR MEETING GROUP: _____

IC12/94

Name _____
Company _____
Address _____
City _____ State _____ ZIP _____
Phone _____
FAX _____

PLACE
STAMP
HERE



MEGA HERTZ

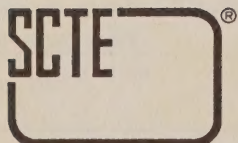
6940 South Holly, Suite 200
Englewood, CO 80112

INTERNATIONAL CABLE

Our New Address:

1900 Grant Street, Suite 720 • Denver, CO USA 80203

Place
Stamp
Here



SCTE
669 Exton Commons
Exton, PA USA 19341

Why the world prefers the MT620 and ICM470 for economical agile performance.

No matter where in the world your system resides – or what kind of power you use – Standard has the best way to build your cable headend or add a new channel.

The world's receiver.

For commercial quality and totally agile performance on NTSC, PAL and SECAM signals around the world, take a look at the economical MT620 Continental receiver.

Built for continuous duty, the Continental features a microprocessor controlled, fully-synthesized PLL tuning circuit with AFC tracking and automatic fine tuning to adjust for LNB drift.

The Continental is compatible with all 950-1450, 950-1750 and wideband 950-2050 MHz signals and all known video scrambling formats. The multi-tap power supply allows 100-250 VAC, 50-60 Hz operation. With the Continental, you can even add stereo capabilities by ordering the optional CAD620 audio demodulator

which features a Panda² 1 type narrow-band stereo decompressor.

The world's modulator.

The ideal companion to the Continental is Standard's revolutionary frequency agile ICM470 modulator.

With core circuitry from our acclaimed TVM Series, the ICM470 offers features and performance old-style fixed channel technology can't match. Its dial-up frequency range from 50-470 MHz delivers high quality video modulation with reduced in-band/out-of-band noise and spurious performance.

The ICM470 accepts 100-250 VAC, 50-60 Hz input voltage for near-universal compatibility and generates PAL, B/G, M/N, I and D video formats in +45 or +60 dBmV output. For systems requiring NTSC, our model SCM470 is available now, and for users looking for a UHF modulator, the ICM890 is coming soon.

The world's choice.

If you have budget restraints but still want top performance, ease of use and compatibility with virtually all international satellite and broadcast/cable formats, consider cost efficient MT620 receiver and ICM470 modulator.

They're how the world plugs in.

The Right Technology for Right Now.

 **Standard
Communications**

SATELLITE & BROADBAND
PRODUCTS DIVISION

P.O. Box 92151
Los Angeles, CA 90009-2151
310/532-5300 ext. 280
Toll Free 800/745-2445
Fax: 800/722-2329 (Toll Free)
310/532-0397 (CA & Int'l Only)

Panda² is a trademark of Wegener Communications

How the world plugs in.



Tektronix brings non-linear thinking

Introducing **Profile**[®]
Disk-Based Video and Audio
File System.



Specify **Profile**[®]
from your
video system
integrator.

Reader Service Number 50

© 1994 Tektronix, Inc. Profile[®] and Intelligent Compression[™] are trademarks of Tektronix.
Betacam[®] is a registered trademark of Sony Corp.

to an otherwise linear world

This is no mere evolutionary advance. The new Profile® Disk-Based Video File System is a quantum leap forward in form, function and value.

For starters, Profile provides CD quality audio and first generation Betacam® SP quality video. While Intelligent Compression™ lets you specify the exact video quality you need for every application.

Tektronix Image Quality Profile makes the many advantages of disk recording both affordable and practical.

Intelligent Compression With four independent record/play channels, a single

Simultaneous Record/Play Across All Channels Profile streamlines commercial insertion, newsroom editing and program delay operations that tie up multiple tape

Integral Video Router machines. And it does so more simply and economically. With virtually no downtime.

Open Architecture An integral 32x32 digital router makes it easy to integrate Profile into any video environment.

Multiformat And, its open architecture lets you expand and upgrade with plug-in cards.

High Reliability

Don't be limited by linear thinking. For complete information call your local Tektronix sales office.

Tektronix

Wharf Cable scotches rumors, opens PPV service

By Stewart Wittering

Wharf Cable has now opened its pay-per-view (PPV) service, Cable Cineplex. Since October 6, cable TV viewers have been able to choose from a menu of 10 or movies every day, paying only for what they order and viewing at a time convenient for them.

Cable Cineplex has four houses or channels, each offering a different movie theme. House A, the Hollywood Cinema channel, only shows Hollywood blockbusters. Every film is shown for the first time on Hong Kong television. Nicam sound is available and all foreign films are shown with Chinese subtitles. House B, the Local Cinema Channel, shows the best of Hong Kong talent starring in the

most popular and recent films, ranging from romance to action to comedy. House C, the Tenth Hour Impulse channel, shows uncut versions of international and local Category III films after 10 p.m. All films have Nicam sound and have either English or Chinese soundtracks. House D, the Family Cinema Channel, provides all-around entertainment for the whole family using mostly animated programs that are "healthy, educational and fun."

Subscribers wishing to receive House C as part of their entertainment package need first to fill in a registration form declaring their age to be over 18. Parents, however, can prevent their children from watching Category III films simply by using the parental lock on the set-top unit.

Stephen Ng, deputy chairman and managing director of Cable TV, aims to bring real choice and diversity to the people of Hong Kong: "As a pioneer in advanced television services, Cable TV launched with eight channels in October last year and added three further channels in May of this year. We now offer four additional pay-per-view channels, which are part of the lifestyle of developed countries such as the United States. By introducing this service, Cable TV is making lifestyle options available to Hong Kong consumers that are on a par with those of any international capital."

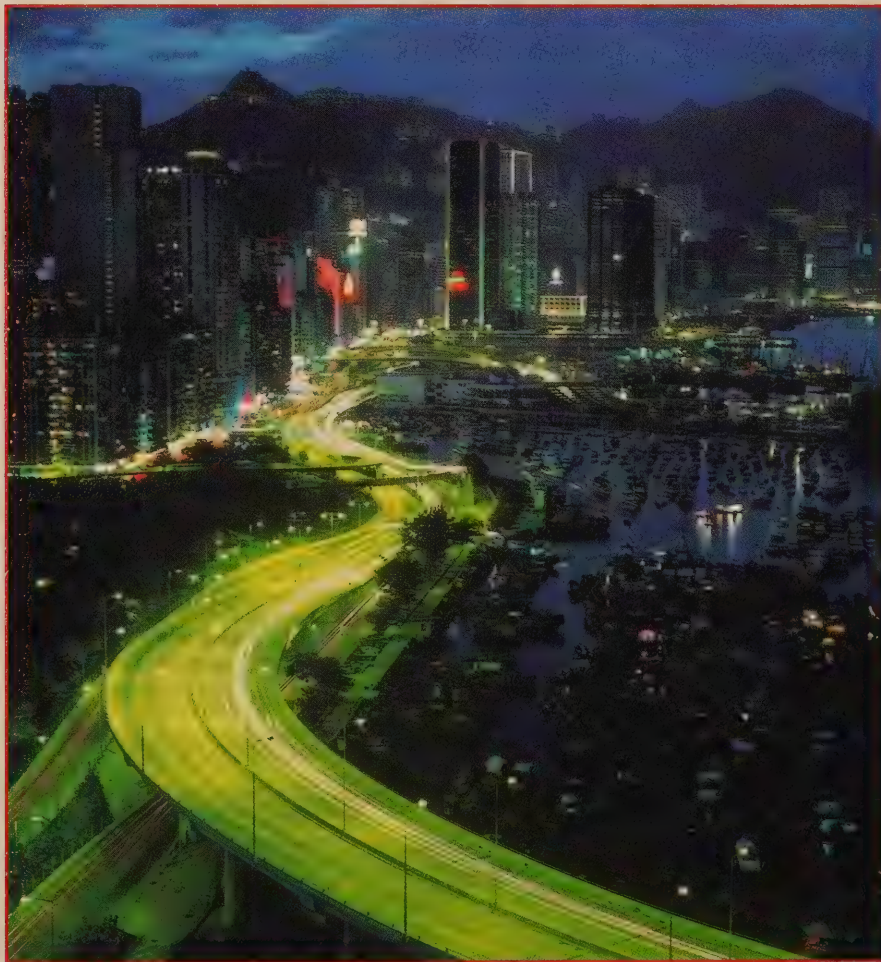
Each of the four houses of Cable Cineplex offers both first-run movies sourced both locally and internationally, spanning the whole spectrum of viewer interests. Ten or more movies are being shown at different times across the four houses each day. Viewers, billed monthly through the post, pay HK\$20 for first-run films and HK\$25 for each Category III movie ordered from the selection.

Cable Cineplex begins at 4 p.m. on Wednesdays and 12 noon on Fridays, Saturdays, Sundays and public holidays. House C films start after 10 p.m. Between them, the four houses provide up to 33 hours of entertainment per day and average 16 new titles per week. Program schedules are listed on the Cable Guide and Preview Channel.

Cable Cineplex is to bring some 300 first-run movies to Hong Kong homes in its first year, which easily outnumbers the total number of movies screened in Hong Kong in any one year. The exact selection and program scheduling is to reflect the needs of the average Hong Kong viewer.

Cable Cineplex is one of the many innovative products Cable TV hopes to bring to the colony. With the roll-out of fiber-optic networks due to start next year, Cable TV intends to introduce a full spectrum of interactive multimedia services including movies, entertainment, news, information and home services such as banking or shopping.

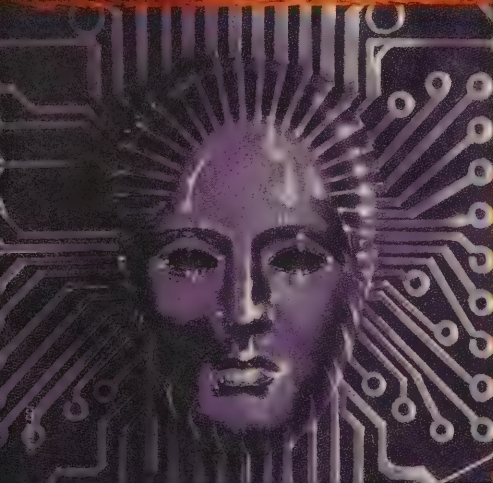
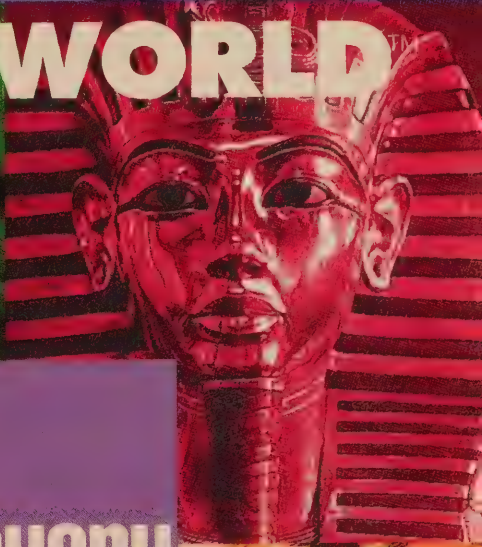
Cineplex is a PPV movie service fully equipped with the most advanced computer technology. It is available to every Cable TV subscriber who wishes it. All they have to do is select a movie, dial



SCIENCE AND TECHNOLOGY. NATURE. HISTORY.
WORLD CULTURES. HUMAN ADVENTURE.



EXPLORE YOUR WORLD



THE
Discovery
CHANNEL™

FOR MORE INFORMATION ABOUT THE DISCOVERY CHANNEL PLEASE CONTACT:

Dawn L. McCall - Latin America
Tel: 305-461-4710, Fax: 305-461-1402

Domenick Fioravanti - Discovery International Networks
Tel: 301-986-0444, Fax: 301-986-4825
Reader Service Number 38

Kevin-john McIntyre - Asia
Tel: 852-822-7188, Fax: 852-810-8456



Tony Leung (left), lead actor for the internationally acclaimed film "The Lover," with Stephen Ng (blue suit), Deputy Chairman and Managing Director of Wharf Cable, at the Cable Cineplex press launch.

183 2828, pass details to the computer keyboard operator such as subscriber identification and whether Nicam sound is required or not, sit back and wait. Once ordered, the movie can be received in the home within 10 seconds. Orders can be placed three days in advance or up to 15 minutes after the show has started.

Rumor scotched

Tales have been spread by word of mouth and print that Cable TV's Cineplex House C is to show soft porn movies. Benny Chan, Wharf Cable's senior corporate communications manager is most keen to scotch this rumor. "Only one of the four houses or channels will show Category III films after 10 p.m. Category III films are anything the government's film censors judge should be shown to an adult audience only and may feature the whole spectrum of human emotions, not just sex."

So much for rumors, then. Category III will be showing nothing that can't be seen at any good neighborhood cinema.

In addition to the four PPV channels, Wharf Cable's Cable TV offers subscribers 11 channels as part of its basic package:

Cable News Channel: The 24-hour flagship channel provides coverage of local, international, community and financial news and current affairs with hourly updates. It also features the latest information from China, Taiwan

and other nonmainland Chinese communities.

Wharf Cable/CNNI Channel: The English-language channel that offers CNNI's live international news coverage around the clock, as well as extensive coverage of local and regional political, sports and business news and current affairs.

Cable Entertainment Channel: An alternative to broadcast entertainment, this channel offers prime-time entertainment for all the family all the time, including top-rated international and SE Asian drama series, comedies, variety shows and locally commissioned telefeatures and miniseries.

Cable Movie Channel: This channel brings an array of movies including International Film Festival award winners, blockbusters, Hollywood classics, and Chinese language films from China, Taiwan and Hong Kong. With six titles a day, one of them brand new, it is a favorite with movie buffs.

Cable Sports Channel/ESPN: This channel delivers extensive coverage of local adult and school sporting events, complemented by live coverage (seven-and-a-half hours per day) of international sporting events. The channel also features sports bulletins and athlete profiles.

Cable Children's Channel: With music as the backbone, this channel reflects the lifestyles, habits and values of Hong Kong's young and the young at heart.

Cable YMC Channel: Targeting the

primary school set, this channel gives children the opportunity to speak about their own world in a range of new programs especially for them. It also offers a wholesome mix of programs including cartoons, children's dramas and game shows.

Cable Preview Channel: An electronic guide showing program schedules, this channel makes use of a video-matrix real-time split screen.

Cable Learning Channel: A 24-hour channel dedicated to providing both educational and infotainment programs for the general public by offering accredited course programs jointly produced with various tertiary and continuing education institutes, as well as community education programs covering everything from the family, health care and career selection to hobbies and art appreciation.

Cable Women Channel: The first 24-hour channel is Hong and Asia which caters especially for the viewing needs of Hong Kong women. The Cable Women Channel features entertainment, information and personal fulfillment programs, both locally produced and bought-in, for career women and housewives.


Cable International Channel: With the objective of providing information and entertainment programs for different nationalities in Hong Kong, this channel features dramas, news, talk shows and cultural programs in original languages from Europe, Japan, Korea, and the Philippines. Provincial operas, drama and arts from different linguistic areas of China also are featured.

ANBC deal

In October, Cable TV announced the signing of a deal with NBC to carry ANBC (Asia NBC) business news starting November 1, 1994. This deal follows shortly in the wake of an announcement of Cable TV's imminent launch of the Finance Channel and consolidates Wharf's claim to be the number one news platform in Hong Kong. Cable TV will initially carry seven hours of ANBC from midnight to 7 a.m. on its International Channel. Cable TV carries or intends to carry:

- 24-hour Cantonese News Channel
- 24-hour CNNI (including 1 hour locally produced English news bulletin)
- 32 hours of BBC programming per week, CCTV from Beijing, CTV, TTV, CTS News from Taiwan (from Nov. 1), ATN News from Australia (from Nov. 1)

Reliable Power Will Make It *Super.*



The great promise of the information superhighway is creating high customer expectations. To satisfy these, reliable power is a must.

Alpha Technologies and Johnson Controls have been providing reliable power to the cable television and telecommunications industries for years.

The Dynasty® Gel Cel battery and the CableUPS® XP Series power supply are the leading choices for cable operators for one, simple reason—*reliability*.

- **Advanced Technology**

Advanced design features such as temperature compensated recharging extend battery life and performance.

- **Single Source Convenience**

The Alpha/Johnson Controls team provides a single point of contact for complete, convenient customer service.

- **Proven Reliability**

Reliable power reduces maintenance costs and customer churn. Which is why this team is the leading choice for cable television powering.



Alpha XP Series power supply and Johnson Controls Dynasty® Gel Cel battery.

► For more information, call: **1-800-421-8089**

United States
Alpha Technologies
3767 Alpha Way
Bellingham, WA 98226
Tel: (206) 647-2360
Fax: (206) 671-4936

Canada
Alpha Technologies
5700 Sidley Street
Burnaby, B.C. V5J 5E5
Tel: (604) 430-1476
Fax: (604) 430-8908

DYNASTY
JOHNSON
CONTROLS

alpha
ALPHA TECHNOLOGIES

Reader Service Number 27

Come see us at the Western Show booth #1000

FOR CONTROL AND RELIABILITY

550 MHz
tuner

Sleep timer/
automatic
shut-off



Program selection
of favourite and/or
parental guidance
channels

Digital model
MXC-2020

Now available with SECAM and PAL formats

 **Viewstar**

18 Dufflaw Road, Toronto, Ontario M6A 2W1
Tel. (416) 789-1285 Fax (416) 784-9968

and CFI News from France, all on the International Channel

- Finance Channel (from Jan. 1, 1995)
- Full BBC channel under discussion (before Dec. 1)
- Full ANBC channel (from March 1995).

Program sources

All the live programs are produced in Wharf Cable's own studios in the 12-story Wharf Cable Tower or in district studios. These are supplemented with extensive outside production and broadcast facilities. Original local productions including dramas, telefeatures, comedies and lifestyle analyses are commissioned from independent producers. In addition, overseas programmers are sourced from major broadcasters and distributors, repackaged and dubbed to meet local tastes.

Wharf network

Wharf Cable has plans to build an ambitious network. During the first phase, Wharf Cable is using a multi-channel multipoint distribution service (MMDS). Fourteen transmitters are strategically located around the territory to feed TV signals to small rooftop receivers mounted on apartment blocks, where they are distributed to as many as 5,000 homes on the same estate or adjoining buildings.

Some 800,000 homes have been wired to date. It is estimated that this figure will grow to 1.2 million by the end of 1994 and will cover 90% of all Hong Kong homes by the end of 1995.

During the second phase, Wharf Cable is to use optical fiber. A fiber trunk network has already been built in MTR (metro) tunnels to provide a fiber-optic backbone. Work on the set-top of an optical fiber distribution network, which will supersede the MMDS service, will commence in early 1995.

The fiber-optic network will allow the delivery of 40 TV channels as well as interactive and multimedia service. The service will be delivered through the same wall socket as existing TV services. To subscribe to the basic package, customers will have to pay a monthly subscription fee of HK\$198. **IC**

Stewart Wittering, formerly of BT, is a freelance consultant and journalist living in Leicester, England. An honors graduate of the University of London, he is a member of the Institute of Linguists, and a registered incorporated engineer.

Favorlangh Cable Consultants, Inc.

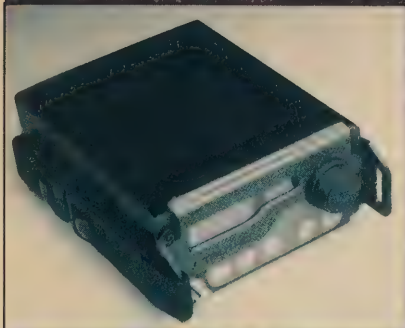
CATV Specialist In Taiwan
FCC Provide

- (1) CATV/MATV Franchise Proposals
- (2) CATV Marketing Research
- (3) CATV Programming Services
- (4) CATV PR/Lobbying Campaign



1-18, 7th Floor
Taichung Kang Rd., Sec. 2 Tel: 886-4-329-0930
Taichung, Taiwan Fax: 886-4-329-0925

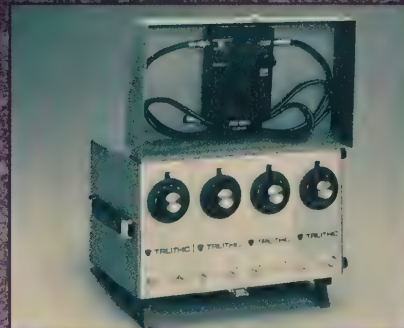
PUT OUR EQUIPMENT TO THE TEST.



Tricorder Hand-held instrument that functions as signal level meter, leak detector and data logger, plus performs FCC 24-hour test. Choose either 5-600 MHz or 5-1,000 MHz frequency ranges.



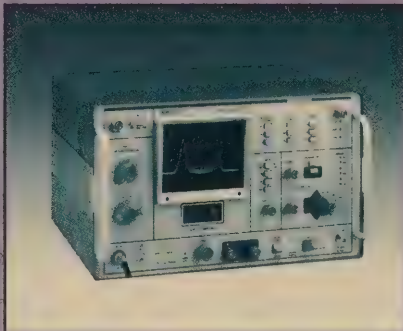
NCC-1701 Video sweep generator providing test signal to modulator for in-channel flatness of entire system. Use with any modulator and Trilithic SP-1075 or other spectrum analyzer equipped with digital storage.



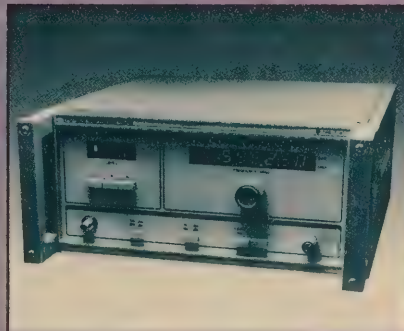
VF-Series Filters/AM-600 Preamplifier VF preselectors extend the range of composite triple beat, cross-modulation and carrier-to-noise measurements by filtering out all but the carrier to be measured. **AM-600** 20 dB preamplifier boosts set top converter output to level needed for FCC Part 76 testing.



Searcher Plus Performs calibrated leakage measurements down to 2 microvolts per meter. Comes with mobile mount for quarterly driveouts, and can be hand-carried to pinpoint leak source.



SP-1075 Spectrum Analyzer Portable, rugged 1 GHz spectrum analyzer measures signal levels, hum, intermodulation and carrier-to-noise. Built-in loud speaker. Digital storage and rechargeable battery optional.



TFC-450/TFC-600 Tunable Frequency Counters Automatically strips modulation from the video carrier for accurate measurement of video carrier frequency and aural-visual carrier separation.

For more than 20 years, CATV technicians and engineers have relied on Trilithic instruments — because our experience has given them the tools they need in the field. And, with our instruments for headend testing and automation, Trilithic is *your one source* for CATV test equipment. We offer a full line of products designed specifically to help you meet FCC Part 76 test requirements.

The last thing you want to worry about in the field is the accuracy and compatibility of your CATV test equipment. Trilithic engineering and quality assures you that our products deliver results, and are designed for rugged conditions and tight confines of field work.

Put us to the test.

Call Trilithic at 1-800-344-2412 for a copy of our latest catalog featuring these and many more products for your CATV system.



TRILITHIC

9202 E. 33rd Street
Indianapolis, Indiana 46236
(317) 895-3600 (800) 344-2412
FAX (317) 895-3613

Turf battles in outer space

By Rick Mendosa

The little Pacific island nation of Tonga became a satellite giant through a strange twist of fate. It happened by chance because two neighbors — who in 1987 were living in San Diego, California, U.S.A. — were both looking for a tropical paradise to retire.

Since both men were entrepreneurs, it didn't turn out that way at all. For one of them, Dr. Matt Nilson, retirement plans led instead to the high point of his eventful career and put Tonga on the satellite map of the world. For the other, Jerry (J.J.) Fletcher, it was a costly experience.

Fletcher was the first of the two men to settle in the Kingdom of

Tonga, where about 102,000 people live on 169 islands that together are smaller than the area of New York City. At the time he owned restaurants and motels in San Diego, and Nilson was one of his customers, Fletcher recalls.

"Matt was not that much of a friend at the time," he says. "My wife and the lady who was living with Matt were good friends. After I moved to Tonga is when Matt became, quote, a good friend."

Fletcher planned to write books in his Tongan retirement and did write one, *Devils with Green Faces*, a fictionalized account of his experiences in Vietnam with the U.S. Navy. But like the entrepreneur he is, Fletcher set up two little companies, Fletcher International Ltd., as an Anheuser-Busch beer distributor, and Airport Services Ltd., which provided catering facilities at the international airport for Nuka'alofa, the country's capital.

To get the health care he needed for infections left from his Vietnam service, Fletcher subsequently returned to the U.S. He now lives on a 300-acre ranch with 11 quarter horses near Wickenburg, Arizona, U.S.A., and owns a restaurant in Bethesda, Maryland. He says he lost money on the businesses he ran in Tonga.

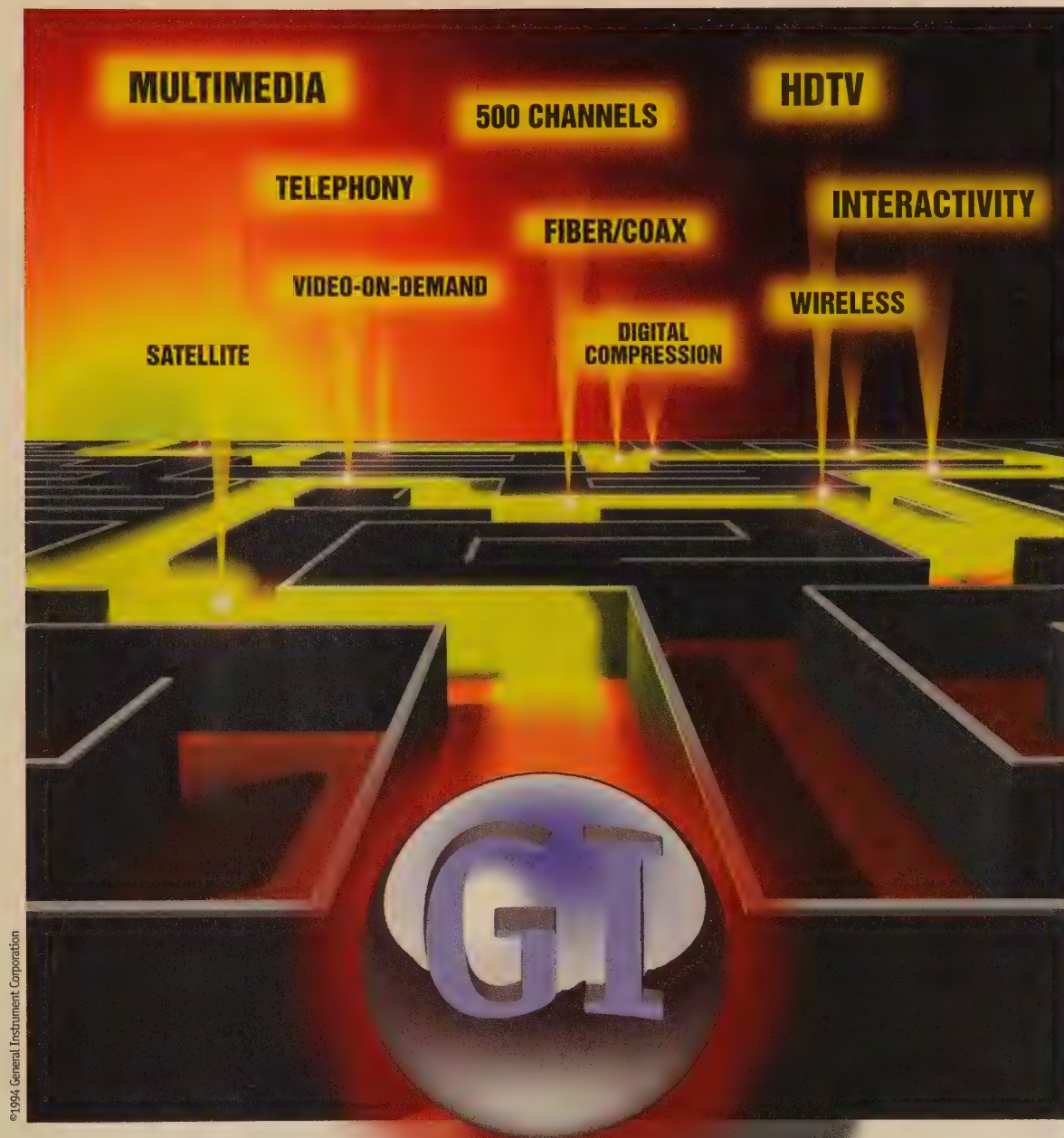
Meanwhile, Nilson says that he decided to retire and "change my life entirely, because my wife died." He found out from Fletcher that "Tonga was a good South Pacific paradise. I visited him and went back and packed all my household goods and a couple of earth stations and went to Tonga. I decided to move there and do nothing for a while, but it didn't work that way."

The way it worked was that Fletcher's Tongan business partner, the late Kelepi Tupou, was a good friend of Princess Salote Pilolevu Tuita. The three of them were partners in the airport catering business. She recalls that it was a pilot project for them to teach her about business.

"Matt was introduced to me within that circle," Princess Pilolevu says. He told her that he had the idea of getting the government of Tonga to apply for orbital slots. "After Matt convinced me in theory that his idea was going to work, I said to him, 'I better talk to my father, the King, to see if he thinks it is



In his own words, Matt Nilson "founded, funded, initiated, developed, marketed and financed Tongasat over six and one-half years."



©1994 General Instrument Corporation

Let us guide you through the world of Telecommunications and Pay TV.

There's a technological revolution in the world of Pay TV and Telecommunications. Changes are happening so fast, they're often hard to keep up with. As a world leader in Pay TV, General Instrument is among the forces making these changes.

We're also providing the vision and products to help operators navigate through this changing world.

For years, we've offered the latest technical solutions and product know-how. We continue this tradition by offering a full array of services and products. Jerrold CATV equipment and network designs, and now Telephony. DigiCipher® digital compression technology.

Complete satellite systems. CommScope coaxial and fiber optic cable.

As the leading supplier of equipment and technology to the industry, General Instrument remains steadfast in our dedication to creating the products, the planning, and the thinking that can help chart your course to success.

For more information, call us today. We'll help guide you to tomorrow.

GI General Instrument

(215) 674-4800 (worldwide) • (800) 523-6678 (toll-free in U.S.) • (215) 956-6497 (fax worldwide)
Worldwide offices are located in: Argentina-541-788-4567 • Brazil-55-21-494-3132 • Canada-416-789-7831 • England-44-734-755555 • Hong Kong, China-852-587-1163

Reader Service Number 42



Dr. Wilbur Pritchard characterizes Nilson as "a flawed genius, but a man with some very creative ideas."

going to be worth the government's time."

King Taufa'ahau Tupou IV was interested and agreed to meet with Nilson in November 1987. Nilson says the King was aware that all of the South Pacific suffered from poor and expensive communications, "so his natural question to me as a satellite expert was, 'How can we improve this?'"

A good deal for Tonga

Nilson's response was a plan for Tonga to register orbital positions with the International Telecommunications Union (ITU) and build and operate satellites in a joint venture with other South Pacific countries. To do that, the government of Tonga in April 1988 authorized Nilson to establish a Tongan company as the exclusive agent of the government. The company was named Friendly Islands Satellite Communications Inc. and does business as Tongasat.

Princess Pilolevu originally owned 40% of Tongasat's shares with the balance equally divided among Nilson, Fletcher and Topou. Shortly before Topou's death, he gave his shares to the Princess, who now holds a 60% interest in Tongasat.

It was a good deal for Tonga. The agreement called for the government to contribute no funds to Tongasat but collect half its net income. All

funds to get the new company off the ground came from Nilson, who lent it about US\$1 million.

Where did Nilson get that kind of money? Born in Sweden, he came to the U.S. when he was 16. He earned his doctorate in engineering from an Austrian university. Most of his life he had been a bureaucrat working for General Dynamics, Comsat and Intelsat.

He says he retired the first time when he quit Intelsat in 1979 to found Nilson Research Corp., a telecommunications consulting firm. Then, he started another company, Advanced Business Communications Inc., which got conditional U.S. Federal Communications Commission (FCC) approval to launch two satellites with his joint venture partner, Hughes Aircraft Co.

Timothy Logue, a space and telecommunications analyst with Reid & Priest in Washington, remembers that Nilson sold his controlling interest to his venture partner as "a trial run for the Tongasat scenario." It also pushed the limits of the FCC's tolerance, he recollects.

That project, however, did not make Nilson a wealthy man. "Hughes Aircraft Co. and ABCI jointly relinquished the planned early launches due to a severe market slump forecast in 1985 and dissolved the joint venture," Nilson explains.

Instead, his money came from a successful gamble on the FCC's lottery for cellular frequencies. Nilson made about 100 applications, and won one, for Waco, Texas, U.S.A. Logue estimates that earned him about US\$2 million. Nilson isn't saying, merely noting that "I did quite well on both ABCI and the consulting activities."

His investment in Tongasat hasn't yet paid off that well. "I have been reimbursed my outlays without profit," he states. But Forbes recently estimated that the 20% of Tongasat that he owns plus 11% of a company that works with Tongasat is worth about \$18 million. Nilson scoffs. "That is too high, but it could be one day," he maintains.

A bold plan

Before Tongasat could literally get off the ground and start generating any profits, it had to win orbital positions from the ITU and then launch some satellites. The first goal turned

out to be difficult and the second impossible.

Like many bureaucrats, Nilson knew that no matter how small Tonga was it could claim some of the few remaining geostationary orbital parking spaces. But unlike them, he also had the entrepreneurial drive and made the right connections to carry out his daring plan. All these factors were essential to his success.

"A lot of people in telecommunications administrations around the world and in the ITU itself would have known mechanically how to do it," he reflects, "but to put the business together and start it is another thing."

The people at Intelsat also knew how to get slots, but Nilson's bold plan stunned and apparently blindsided them. Nilson's former employer and fierce competitor felt he was poaching on its turf and contended that Tonga's applications for at least 16 slots were merely a front for his financial speculation.

"The Tongasat deal was a scheme to use the sovereign nation of Tonga as a ruse to lock up orbital slots that they would then try to sell for profit," declares Tony Trujillo, Intelsat's director of corporate communications. "It violated what was a gentleman's agreement: that countries only register for slots that they are actually going to use."

Call it a turf battle in outer space. And like battles with real bullets, this one got nasty. Six countries, including the U.S., complained to the ITU that Tonga's claims were "greatly in excess of any projected need." Competitors and detractors called it everything from exploiting a loophole to a space grab. They called Nilson names like opportunistic, a renegade and a slick operator. He may be that, but he certainly is a colorful character in the otherwise rather bland world of satellite business. And he is one savvy entrepreneur.

For years it was questionable whether Nilson would ever be able to pull off his bold plan. Even he, optimist that he is, had his doubts. "Not in the regulatory area, but in the business area," he admits today.

Eventually, Tongasat scaled back its requests to six slots, which the ITU finally awarded in March 1991. A year later Tongasat won its seventh slot. These crucial positions connect the West Coast of the United States to Asia, one of the world's most impor-

MMDS UHF VHF

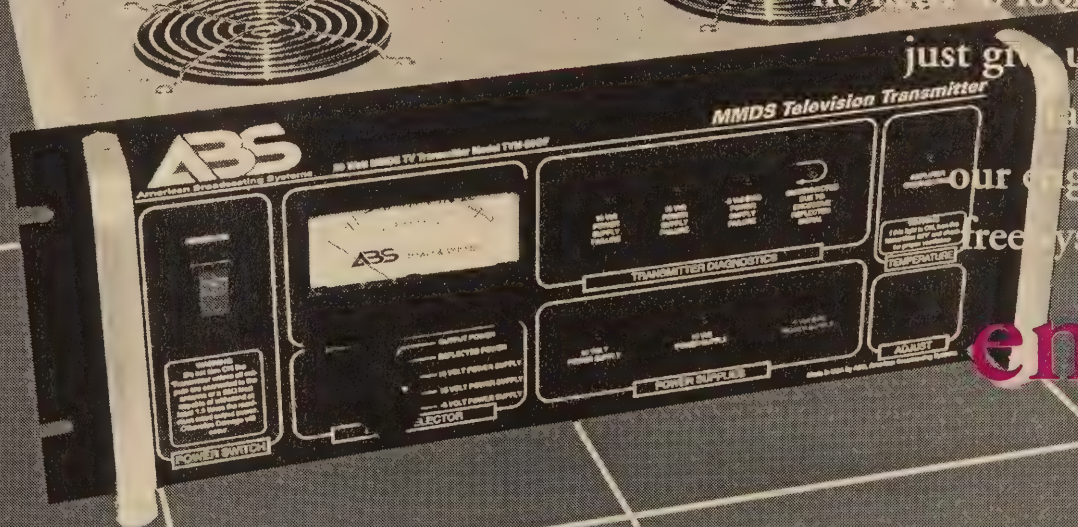
...if you are looking for
NTSC, PAL or SECAM transmitters
capable of withstanding voltage swings,
brownouts, high temperatures,
humidity and all the conditions that
the international Wireless Cable TV
operator might find

...then

no need to look any more,
just give us a call and

talk to one of
our engineers for a

free system design
endif.



Tel: (305) 889-1179
Fax: (305) 889-0623
5416 N.W. 72 nd. Ave
Miami, Florida 33166 U.S.A.



American Broadcasting Systems, Inc.

Taking Your Network Into Tomorrow

Communication network technology is evolving very rapidly. As it does, one international company is leading the world in distribution equipment, and service — Philips Broadband Networks.

Philips Technology.

For the demanding performance requirements of tomorrow's networks, Philips Diamond Line™ Fiber Optic two-way receivers and transmitters, coupled with our 750 MHz Spectrum 2000™ Network Amplifiers and our 1 GHz Passives, are ready for installation today. They will position your networks to deliver outstanding picture quality as well as voice and data communications.

Over the years Philips has led the industry in technological advancements. Our *Push-Pull*, *Feed Forward* and *Power Doubling*™ technologies have assured owners of our Magnavox brand products the ability to increase system capacity and performance without obsoleting their original equipment. And we continue that tradition with all of our new product designs.

Philips System Support.

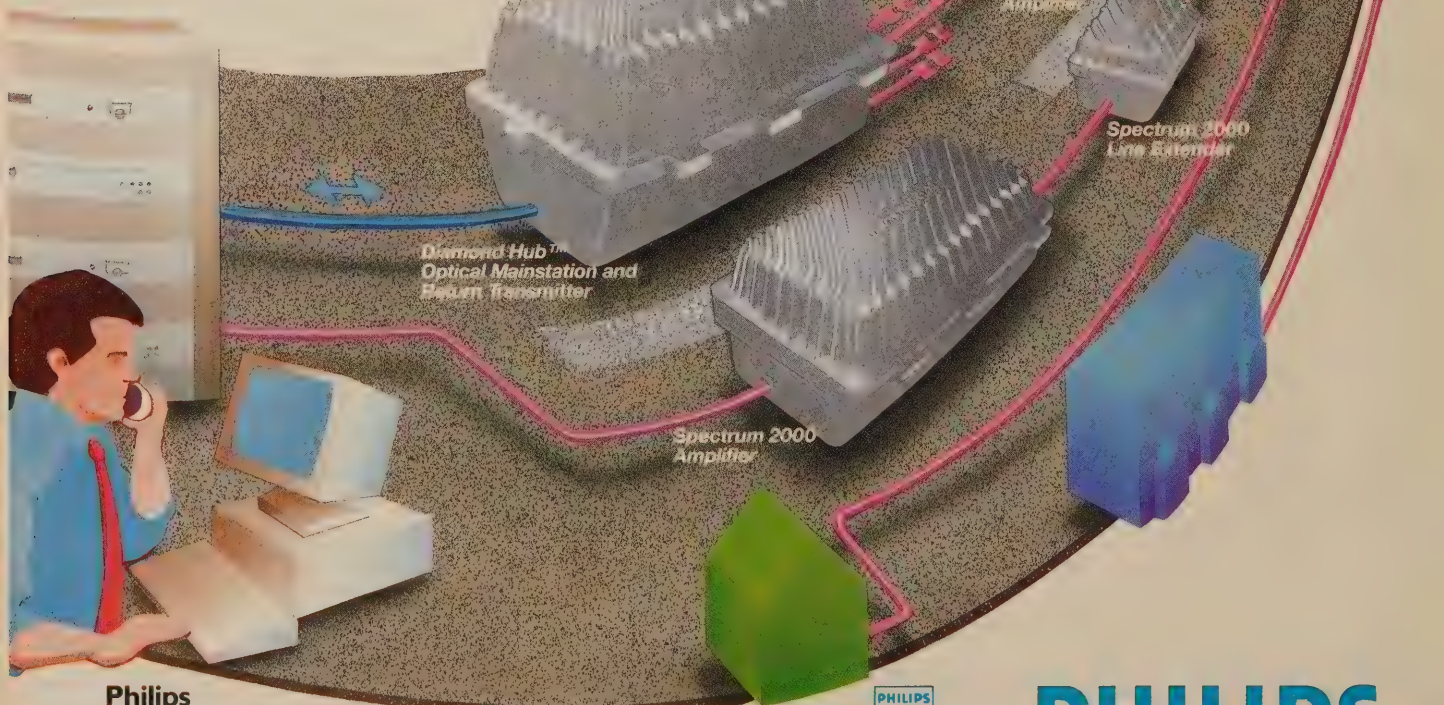
Our factory trained, worldwide network of value-added representatives stand behind every Philips product, and will assist you, on-site, in every aspect of the operation and maintenance of your system. In system design, they will help you to meet your system performance, economy and expandability. And, as *your* network expands and evolves to meet the future, you will have the on-going support of Philips — the world's oldest and most respected name in electronics.

Your Philips Network of Representatives.

Philips has forged strategic alliances with a network of outstanding representatives. Together they bring Philips quality, reliability, service — and the networks of tomorrow — to customers throughout the world. Step into tomorrow. Call your nearest representative, listed on the opposite page, today.

Philips Broadband Networks, Inc.

100 Fairgrounds Drive, Manlius, NY 13104 USA
(315) 682-9105 FAX: (315) 682-9006



**Philips
Broadband
Networks, Inc.**



PHILIPS

Call your nearest Philips Value Added Representative from the list below.

Anshan Broadcast Equipment Plant China	
Tel: 815-464-476-204	Fax: 815-464-814-574
BCD Electronica s.r.l. Argentina	
Tel: 54-41-250-040	Fax: 54-41-248-742
BCD Uruguay SRL Uruguay	
Tel: 598-290-0880	
CYO International Philippines	
Tel: 63-2-721-8190	Fax: 63-2-721-2386
Cable Proveedora Mexico DF	
Tel: 52-5-682-2121	Fax: 52-5-687-5180
Cabletel Canada	
Tel: 905-475-1030	Fax: 905-475-9571
Catec AG Switzerland	
Tel: 41-41-57-8257	Fax: 41-41-57-8219
Electronic Consulting Center Egypt	
Tel: 202-269-6157	Fax: 202-269-9136
Goldstar Information and Communications LTD Korea	
Tel: 82-2-630-5510	Fax: 82-2-630-5528
Kanematsu Cable Engineering Japan	
Tel: 81-3-5440-6820	Fax: 81-3-5440-6821
Magnovox CATV Systems UK Ltd. England	
Tel: 44-296-399-322	Fax: 44-296-395-298
Nordex Switzerland	
Tel: 41-41-47-4727	Fax: 41-41-47-1316
Norwegian Broadband Technology AS Norway	
Tel: 47-67-975-510	Fax: 47-67-975-540
Osterreichische Philips Industrie GmbH Austria	
Tel: 43-1-60-101-1574	Fax: 43-1-60-101-2526
Philips Hong Kong China Group (Beijing) China	
Tel: 815-1-512-8883	Fax: 815-1-512-7351
Philips Hong Kong China Group (Shanghai) China	
Tel: 815-21-326-4141	Fax: 815-21-320-2160
Philips Hong Kong Limited Hong Kong	
Tel: 85-2-773-5588	Fax: 85-2-334-5496
Philips Kabeltelevisie Netherlands	
Tel: 31-40-783-803	Fax: 31-40-784-543
Philips Kommunikations Industrie AG Germany	
Tel: 49-911-526-2853	
Philips Public Telecommunications Systems Pty. LTD Australia	
Tel: 61-3-881-3666	Fax: 61-3-881-3577
Philips Singapore Pte LTD Singapore	
Tel: 65-350-2000	Fax: 65-253-7780
Philips Sistemas de Comunicacao Portugal	
Tel: 351-1-416-3333	Fax: 351-1-416-3156
Philips Telecomunicaciones SA Spain	
Tel: 34-1-404-2200	Fax: 34-1-326-5814
Philips Thailand Thailand	
Tel: 66-2-398-0141	Fax: 66-2-399-2714
aPhilips Videocommunications et Telematique France	
Tel: 33-1-47-28-5800	Fax: 33-1-47-28-5544
Publicable Belgium	
Tel: 32-2-241-0010	Fax: 32-2-241-6370
Sater S.R.O. Czech Republic	
Tel: 42-49-34-829	Fax: 42-49-34-829
Tadiran Limited Israel	
Tel: 972-3-926-1203	Fax: 972-3-926-1820
Trafin Oy Finland	
Tel: (9) 0 8044822	Fax: (9) 0 8044833
Trans Electric Co. LTD Taiwan R.O.C.	
Tel: 886-4-761-8326	Fax: 886-4-763-39
Veneda Investments LTD Poland	
Tel: 48-22-269-13	Fax: 48-22-269-134



PHILIPS

Reader Service Number 84

tant traffic streams, with 3.5 billion people in the coverage pattern.

Nilson says that "from 1988 to 1991 we tried to enlist several countries (in a joint venture with Tongasat), but Intel-sat's intervention came in June 1990 and usurped our position of being able to get financing to build and operate a system. That was a serious setback. So instead we turned to operators who were interested in doing their own financing and in owning the satellites and operating them in our positions."

He was first able to breathe a sigh of relief in October 1991 when Tongasat signed up Unicom Satellite Corp. as its licensee for two slots. "It was a very unusual contract, namely a contract where they became a licensee of Tongasat, where Tongasat is an agent of the Kingdom of Tonga."

That was unusual, Nilson says, "because this is an operator who is not domestically owned or a majority-owned corporation of Tonga. That's where all the subsequent criticism has come in. But if you think about it, there is nothing unusual about it, because PanAmSat is owned 50-50 by Mexican interests and is flying under a U.S. flag, so it is not much different. AsiaSat flies under the flag of Hong Kong, which is really the U.K. flag, but the U.K. has nothing to do with AsiaSat, other than Hong Kong happens to be a crown colony."

With the Unicom contract in hand, Nilson thought he could finally relax. "At least we knew we had one party who planned to put satellites in three positions." That hope turned out, however, to be premature.

Unicom failed to get the financing it needed. But by the time that was apparent, Nilson had signed up Rimsat Ltd., a Fort Wayne, Indiana, U.S.A., startup formed in April 1992. Rimsat has since put satellites in three of Tongasat's positions and has options on two more.

This year Tongasat licensed one position to APT Satellite Co., a Hong Kong-based consortium that is principally owned by three ministries of the Peoples Republic of China. Tongasat is in discussions with several groups for its last available position.

The roof caves in

But just as the ultimate success of Tongasat was apparent to the world, it caved in on Nilson. In his words, he "founded, funded, initiated, developed, marketed and financed Tongasat over

"The people at Intelsat also knew how to get slots, but Nilson's bold plan stunned and apparently blindsided them. Nilson's former employer and fierce competitor felt he was poaching on its turf."

six and one-half years from October 1987 to February 1994."

What happened in February was that he was fired as Tongasat's managing director. Nilson likes to put a happier face on it, citing "business differences of opinion" on how Tongasat should be run in the future. "It is simply a matter of that, and there is no animosity."

The differences of opinion he's talking about turn out to be an alleged conflict of interest and the results of an audit by Price Waterhouse of Auckland, New Zealand. Another little difference is the suit that Nilson has brought against Tongasat.

"Matt's litigation arises out of the board's decision in February to relieve him of his position as managing director and the shareholder's decision in late February or early March to remove Nilson Research Corp. as a member of the board," declares Tony Fitch, senior counsel at Swidler & Berlin Chartered, a Washington law firm, which is representing the defendants. Nilson's suit in the U.S. District Court for the District of Columbia is against Princess Pilolevu, Fletcher and Tongasat.

Princess Pilolevu says discharging Nilson was painful after "knowing somebody and trusting him for five years." She says that Nilson had called her "and tried to convince me that it was for the good of Tongasat that he was going to buy shares in Rimsat." Then she learned that even before his call "he had put things in motion."

Did that make her mad? "Yes," she replies firmly. "It was a slow anger, but unfortunately with slow anger it builds up." It's her understanding now that Nilson both owns stock in Rimsat and is a director.

Nilson doesn't deny it. His resume

states that "Dr. Nilson is a shareholder and serves as a director of Rimsat Ltd." He says that Rimsat wanted him to have some ownership initially, "but I considered that would be looked upon as a conflict of interest." So he says he waited until the end of 1993 to exercise an option to purchase 11.25% of Rimsat's stock.

Then, when Price Waterhouse audited Tongasat's books "they couldn't get Dr. Nilson to send the originals of a lot of his receipts,"

Princess Pilolevu says. "He just sent them copies, but no Price Waterhouse auditor would accept copies. The conflict started with that. And also with personal expenses. Dr. Nilson said he believed they were company expenses. Things like that, and it went on and on, and it was pretty upsetting."

Are there any suspicions of embezzlement? "I wouldn't like to say so at this stage," Princess Pilolevu responds. "I feel that I am

walking on eggshells, because we were very good friends. To part in this manner is very painful. I am grateful to Matt for giving us the idea and for helping us to initiate Tongasat."

Hopes for reconciliation

In fact, conciliation efforts are underway. At Nilson's request, Sione Kite, Tonga's High Commissioner to the United Kingdom, called *International Cable* from Kyoto, Japan, where he was attending an international conference. He asked for a postponement of this article in hopes that "an amicable settlement" could be worked out.

Whatever the outcome of those efforts, Nilson deserves credit for creating the world's most remarkable satellite institution. That makes the current furor with Tongasat all the more poignant a personal tragedy for him.

As one close observer, who does not want to be quoted by name, said, "Matt put a lot into starting this. Had he been satisfied, he could have been on easy street forever."

Perhaps the best summary of Nilson's complex personality is one offered by Dr. Wilbur Pritchard, his successor as Tongasat's managing director. Pritchard, who has known Nilson for 25 years, characterizes Nilson as "a flawed genius, but a man with some very creative ideas."

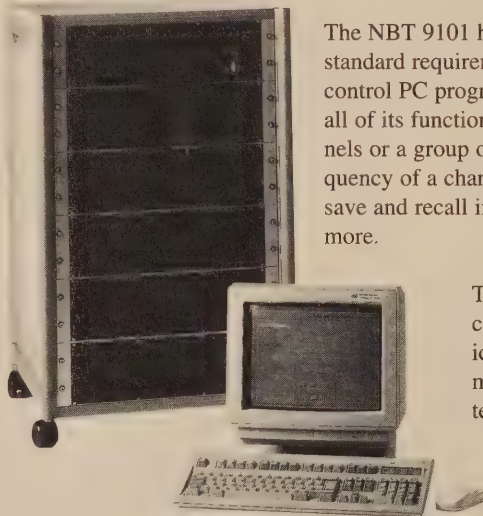
Princess Pilolevu agrees with Pritchard's assessment. "Matt is a brilliant man, but one has to be careful that brilliance doesn't outshine other things that are more important."

Nobody should imagine that at 56 Nilson is finished. Already he is planning other entrepreneurial ventures, "but not related to the provision of satellite services per se. They are in other fields that will perhaps use satellite communications. I've retired twice, so now I have to do something else, so I can retire a third time," he says with a grin. **IC**

Rick Mendosa is a freelance writer based in Carpinteria, California, U.S.A., and a senior contributing editor for "Hispanic Business" magazine. He has edited and written for various newspapers, magazines, the U.S. Army, U.S. Civil Service and U.S. Foreign Service, with emphasis on business and politics.

accurately for any broadband system!

Our NBT 9101 Multi Carrier Generator system is designed to meet all your requirements as *the Source* for any number of clean, noise-free and stable carriers whenever you want to measure distortion in broadband CATV, LAN, AML or Fibre Optic systems! It is suitable both for field applications and in the R&D lab!



The NBT 9101 has features that go beyond the standard requirements. It comes with a remote control PC program that lets you easily operate all of its functions for a single channel, all channels or a group of channels, fine tune the frequency of a channel, set a sloped output level, save and recall instrument setups, and much more.

The complete remote control capability makes the NBT 9101 ideal for implementing into instrumentation systems for automated testing.

The NBT 9101 provides you with extensive functions as:

- Synchronous and Non-synchronous modulation modes.
- Dual DutyCycle, 50% and 19%, for the modulating signal.
- PLL VCO's with internal and Common references.
- Calibrated attenuators, 0 to 15 dB in 0.1dB steps, for every carrier.
- Both GPIB and RS-232 interfaces.

For further details, please contact



Norwegian Broadband Technology AS
P.O. Box 13 -Ellingsrudaasen, N-1006 OSLO, NORWAY
Phone int+47 22 30 65 40 / Fax int+47 22 30 64 66

Reader Service Number 64

***Light up your fiber with the best
broadcast quality video possible.***



With more broadcasters and CATV operators realizing the benefits and switching to fiber optic networks, the demand for "signal purity" and higher signal quality transmission has increased. DX sheds a new light on high performance for today's cable operators with the new DIR-657 integrated receiver/descrambler. With a long list of features, including RS-250B broadcast quality performance and optional RS-232C interface for remote operation, the new DIR-657 outshines all other satellite receivers in delivering the sharpest video and soundest audio signals possible.

For more information write to DX Communications Inc., 10 Skyline Drive, Hawthorne, NY, 10532 or call (914) 347-4040.



Come see us at the Western Show booth #1379

Reader Service Number 12

Asian TV channels in the U.K.

By Stewart Wittering

An old adage much vaunted by Victorian schoolmasters was that the sun never set on the British Empire. Sadly, the protection of the British raj now only extends to the shores of Britain's fair isles. But the legacy of her imperial past lingers on in the form of populous immigrant communities, many of them Asian in origin. Desirous of protecting their native culture and tongue, and probably harboring a secret longing for their discarded homelands, some entrepreneurs have set up their own language channels in the U.K.



TV Asia

Launched only in 1992 and broadcasting on the Astra satellite system, TV Asia is arguably the most successful and entrepreneurial channel catering for immigrant populations from the Indian subcontinent and East Africa resident in the U.K. and Europe.

TV Asia experienced a surge in cable and satellite subscriptions during the summertime. An additional 12,000 subscribed to the direct-to-home (DTH) service across the U.K. and Europe. A further 3,000 cable homes also were able to receive TV for the first time, leading to a total subscriber base of 66,500 households. The accelerating growth can be attributed to two factors. TV Asia has gone to a lot of trouble to strengthen its programming with weekly specials such as premiere and blockbuster movies. And programming has been further enhanced by the introduction of local programming and the launch of top soaps from Pakistan and India.

An additional factor has been the increase in sponsored programs aimed at offering spiritual guidance to its viewership. The Festival of Spiritual Unity was broadcast live for five hours every day for a week from London's leafy Roundwood Park during the first week in August. A "galaxy" of Hindi spiritual leaders from the East attracted several thousand devotees. Television coverage, the first in the world of such an event, was watched by equally large numbers of viewers. The whole occasion was sponsored by a single family, the Madhvani, which was quite an act of devotion. Earlier in the year, TV Asia relayed the "Haj" religious festival in near-real-time direct from Mecca, the delay being 30 minutes.

TV Asia also has drummed up a lot of business by entering into a commercial partnership with Tele Aerial Satellite (TAS), a rental and installation company. In August alone, some 5,000 new subscribers were record-

ed. A lesser, but still important, increase in subscriptions can be put down to additional sponsorships by such as the Asian Fashion and Lifestyle Exhibition, held at Wembley, which enticed several thousand Asian beauties to sample delights of new hair styles, new makeup and new clothes.

Asiavision/Asianet

Asiavision stems from the oldest and perhaps the most widely known of the Asian channels, Indra Dhunush, which was launched in 1986. Serving a menu of films imported from India and elsewhere to the U.K.'s audience, Indra Dhunush changed hands in July 1992 to become Asiavision. Programs were broadcast in Hindi, Urdu, Punjabi, Bengali, Gujarati, Tamil and English, mostly acquired from the Asian subcontinent, and distributed to cable operators throughout the U.K. on videotape for onward transmission to 96,000 homes. But Asiavision's owners decided to concentrate their resources on other channels and sold the company to diverse shareholders. Sadly, it ran into difficulties and reportedly went into receivership in June 1994, effectively becoming defunct.

But from out of the ashes the phoenix has arisen in the form of Asianet. Despite repeated requests for information by *International Cable*, little is known of the company at the moment except that it was been set up by "an American company." Watch this space.

Namaste

Namaste is a subscription-based cable-only channel for Britain's Asian community and features dramas, movies, documentaries and general entertainment programs mainly sourced from independent distributors in the U.K. and Asia. Namaste broadcasts from 4 p.m. to midnight every Friday, Saturday and Sunday. Programs are recorded and assembled in London studios before being distributed to cable operators around the U.K. on videotape. Launched in late 1992, Namaste is unsure of its viewing figures but managing director Atul Gandhi claims business is expanding healthily.

مركز الشرق الأوسط



MIDDLE EAST BROADCASTING CENTRE

Middle East Broadcasting

MBC broadcasts serve London's Arab community, helping it to keep in touch with its own cultures and traditions as well as world and regional news. A privately

Homeworx Access Platform

**Your Onramp to the
Information Superhighway**



Reader Service Number 83

Brussels (32-2) 721-5282 • United Kingdom (44-734) 441-955 • Montreal, Quebec (514) 677-9166
Vancouver, BC (604) 270-1675 • Toronto, Ont. (905) 629-3104 • Ottawa, Ont. (613) 723-2171
Singapore (65) 225-8228 • Venezuela (58-2) 286-1444 • Mexico (525) 658-4519 • Australia (61-2) 975-1499

owned station funded by advertisements and program sponsors, MBC claims to encourage exchanges of interest and goodwill throughout the Arab world.

Programs are aimed at the whole family and consist of everything from children's programs, drama serials and international quality films to business bulletins, current affairs and variety shows. Many programs are home-produced and include topics such as fashion, health education, pop videos, travelogues and art. Special programs such as political interviews also are produced in London. Several programs also feature MBC's teletext service, which carries reminders of prayer times and Muslim holy days.

MBC has a 70-strong newsroom team that produces over 90 minutes of news everyday with bulletins on the hour. The news team scooped the rest of the world with unique front-line coverage of the civil war in Yemen earlier this year. Sensitive to the pending crisis, MBC had previously sent a camera crew and senior reporter to the area to interview the parties in dispute. Whilst editing at Yemeni Channel 1 in Sanaa, southern warplanes started bombing the building and MBC's cameraman captured the event with pictures that were relayed around the world. The team also managed to reach Abien, film the battle and witness the taking of prisoners. They also filmed the evacuation of American and British civilians.

Since its inception in September 1991, its transmission time has lengthened from six to 12 hours a day, with 15 on Fridays. It has a total staff complement of 250 in London and many more working in news bureaus and branch offices across the Arab world.

Apart from the U.K., MBC is available throughout the Middle East, North Africa and the remainder of Europe via Arabsat and Eutelsat systems. Selected programs also are available in the U.S., Canada and Central America through the ANA Television Network (Arabnet).

Signals are uplinked to the Eutelsat II-F1 before being retransmitted to the Arabsat 1C, which broadcasts on both S-band and C-band throughout the Middle East and North Africa.

MBC has just completed the construction of its new 6,000-square-yard headquarters building, replete with state-of-the-art serial digital studios and edit suites, making it one of the most advanced TV studios in private hands in Europe. Situated in Battersea, London, the building will house two studios: a 100-square-yard news studio and a 200-square-yard features studio. Between them, they share four ENG editing suites, three main editing suites, a graphics suite, viewing facilities, satellite uplinks and a large library.

BBC TV Arabic Service

Alternative DTH Arabic services are broadcast by the BBC World Service Television's dedicated Arabic-language channel beamed down to countries of the Middle East, the Persian Gulf and North Africa. All enquiries are handled by BBC partner company Orbit Communications in Limassol, Cyprus.

The channel offers a global news and information service dedicated to international audiences. High quality news is at the core of the programming schedule and almost all the news content is tailor-made with very little of it being shown on the U.K.'s domestic channels. International bulletins are followed by regional news and

business summaries, with local weather reports based on expert predictions.

Committed to providing audiences with impartial news coverage and current affairs analyses, BBC World TV employs a newsroom staff of over 100 able to call on the resources of the BBC's 250 international correspondents and 50 news bureaus located overseas. The channel is scheduled and compiled in London with the BBC overseeing control and paying for the service out of its own coffers.

Apart from hourly news and weather forecasts, BBC World TV rebroadcasts major British current affairs and documentary programs such as "Panorama," "Horizon" and "The Money Programme," as well as programs on science and nature.

The BBC World Service TV occasionally broadcasts live programs. When Mikhail Gorbachev was expected to resign on Christmas Day 1991, the whole of his speech was broadcast live with simultaneous translation from Russian. And in June 1992, as unrest in Thailand hit the world's TV screens, Thais turned to BBC World Service Television for the impartial reporting that local media were unable to provide. Within hours, pirated videos of the broadcasts were being sold on the street.

Created in 1991, after the mold of the BBC's famous World Service Radio service, BBC World Television is now broadcast to Africa (via Intelsat VI, 27.5°W), Japan (via JCSat-2, 154°E), Europe (via Intelsat VI, 27.5°W) and Asia (via Asiasat, 105.5°E), which also carries the BBC's World Service Radio.



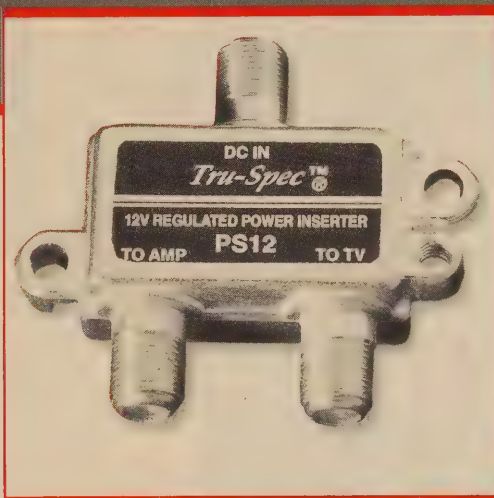
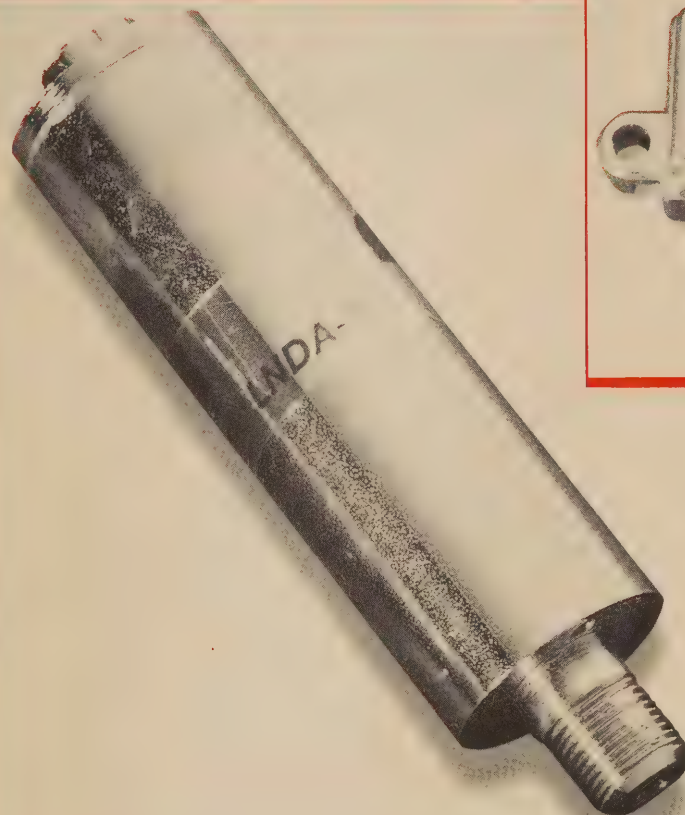
Chinese News and Entertainment

CNE was the first Chinese-language channel in Europe, winning a 10-year license from the Independent Television Commission (ITC). Large viewing figures are claimed from Europe's 1 million Chinese residents and the ever-increasing numbers of Chinese businessmen who visit the U.K.

CNE broadcasts a compilation of prime-time programs from Hong Kong, mainland China, Taiwan and other far-eastern countries. In addition, it has its own in-house news production team that reports on local and international news. Other programs, broadcast in Mandarin, Cantonese or English, range from news and current affairs to drama series and films to sports and music videos. CNE also endeavors to fill the cultural and language void left by mainstream European channels by occasionally broadcasting programs produced by Chinese communities on the European mainland.

CNE has signed a transponder deal with BSkyB's recently launched Sky Sports Two for a further three

THE PERFECT DROP AMPLIFIER



- 10 & 20 dB gain-forward
- 5-40 MHz return available with or without gain
- Surface mount technology
- Regulated power inserter included
- Remote DC power supply included
- Meets FCC specs without rebuilding
- Ultra low noise figure
- Excellent distortion specs



PICO PRODUCTS, INC.

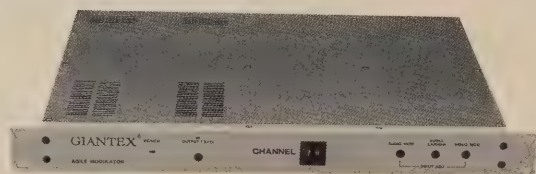
6315 Fly Road

East Syracuse, New York 13057

(315) 437-1711 • Fax: (315) 437-7525

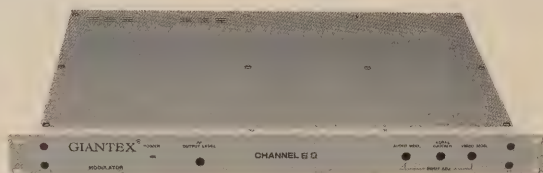
1-800-822-7420 TOLL FREE

MATV/SMATV TOTAL SOLUTION



AG-60 AGILE MODULATOR

- +60 dBmV Output
- CH2-CH78 (50-550 MHz)
- Video AGC
- SAW Filter
- IF Loop for Scrambler



TM-20S FIXED MODULATOR

- +60dB Output
- -60dBc Spurious Performance
- Video AGC
- SAW Filter
- IF Loop for Scrambler



CV-3 SET-TOP CONVERTER

- 88 Channel Capacity
- FAVORITE Channel
- PARENTAL Control
- Japan Made Tuner
- NTSC/PAL/SECAM



ANTEX ELECTRONIC CORP.
263-2, SEC. 1, CHANG NAN Rd., CHANG HUA
TAIWAN
TEL: 886-4-7322561 FAX: 886-4-7322614

hours of transmission per night, increasing its current output to five hours during the early hours of the morning. The agreement will see the service move to the Astra 1C satellite and will greatly increase CNE's programming capacity, allowing further expansion of the channel's exceptionally popular news coverage. Its program mix will be extended to include Chinese films, children's programs and family game shows.



Chinese Channel

But CNE is no longer alone and now faces stiff competition from newcomer Chinese Channel, a joint venture between the U.K.'s Wilton Group and Hong Kong's Shaw Media Group. Rivalry between the two Chinese channels can be described as equally keen but the Chinese Channel, launched only this year, seems to be winning the entrepreneurial battle for the attention of the Chinese community. To help in its endeavors, it has recently launched three initiatives.

In conjunction with London's Spectrum Radio, the first Chinese Top Ten TV Star competition was organized. "Thousands" of viewers from all over Europe sent in entries voting for their favorite stars, encouraged by the chance of a free trip to the U.S. with Virgin Airlines for the lucky viewer whose name was pulled out of the hat. Special events were organized to celebrate Father's Day in Glasgow and Amsterdam where special family lunch parties were organized and children were invited to submit drawings of "daddy." And, following severe flooding in southern China, the worst for 50 years, the Chinese Channel organized a grand bring-and-buy sale to help raise funds for the flood victims. The event took place during July in Gerrard Street, in the heart of London's China Town.

The Chinese Channel rebroadcasts the best of Hong Kong Television Broadcasts' (TVB) output. Perhaps the best known of the colony's broadcasters, TVB produces a mixture of programs in Cantonese, the language of Hong Kong, Kowloon and the neighboring Chinese state of Canton, and in Mandarin, the language of China's intellectual elite. Up-to-the-minute local and international news bulletins also are broadcast. Further programming is sourced from China, Taiwan, Singapore, Vietnam and Malaya.

The Chinese Channel currently broadcasts five hours a night on the Astra satellite system. In September, it began encrypting its programs using Tandberg Cryptovision and Pace decoders. Viewers now rent a decoder and "smart key" from an authorized dealer against a deposit of US\$150. Monthly subscriptions are US\$21 per month. The channel is evaluating the possi-

bility of future transmission over cable networks but has no clear intention of doing so in the immediate future.



Japan Satellite TV

Subscription channel JSTV (Europe) has been broadcasting a Japanese-language channel since 1990. From a lowly two hours per day, encrypted programs are now broadcast for 11 hours throughout the evening and night. Transmissions are uplinked from Japan and relayed via Intelsat to the U.S., where JSTV has a sister company, JSG, before being transmitted to the U.K. via PanAmSat. Once in the U.K., JSTV's technical staff carries out standards conversion, inserts advertisements and provides subtitling in Japanese, where necessary, before uplinking the programs once again to the Astra 1B satellite system. This introduces a delay of approximately 30 minutes, but NHK's global news service is carried in real-time.

JSTV enjoys the backing of its major shareholder, Japan's public broadcasting corporation NHK, plus 38 major Japanese companies in its endeavor to provide the very best of Japanese TV for Europe. A wide variety of top quality programs are selected from NHK channels as well as from Japanese commercial networks.

JSTV has representation in London and 11 other large European cities ranging from Madrid to Frankfurt and from Sweden to Italy. Its subscription affairs are handled by international carrier company OCS Europe. JSTV can be accessed using standard Astra receivers fitted with a Videocrypt decoder.

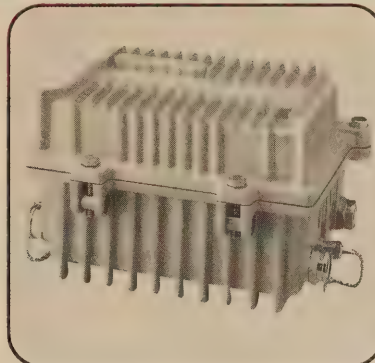
Alternatively, in the U.K., an integrated receiver and decoder can be used. Subscribers are required to pay a one-off US\$150 enrollment fee to join the JSTV club and subsequently pay a monthly US\$45 membership fee, payable quarterly, for use of the Videocrypt smart-card.

Programs, broadcast in both Japanese or English bilingual formats, cover such topics as Japanese current affairs, news and business bulletins as well as the to-be-expected feature films, TV dramas, quiz shows and soaps. Sports coverage ranges from the Asian Olympics to Sumo wrestling. **IC**

Stewart Wittering, formerly of BT, is a freelance consultant and journalist living in Leicester, England. An honors graduate of the University of London, he is a member of the Institute of Linguists, and a registered incorporated engineer. Having lived in Venezuela and France, Wittering speaks fluent Spanish and French.

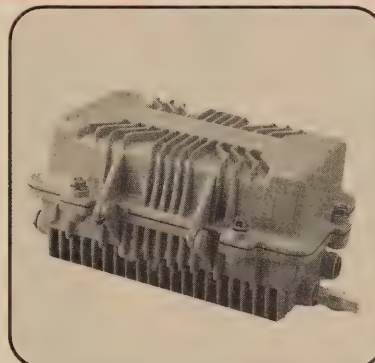
PROVIDING CATV EQUIPMENT

LINE EXTENDER AMPLIFIER



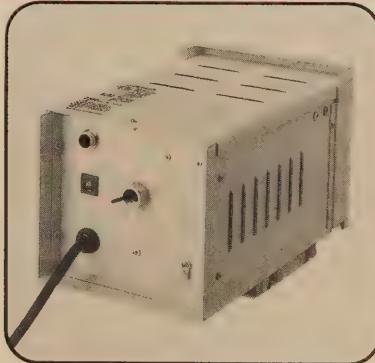
- FORWARD 54-550MHZ RETURN 5-33 MHZ
- RESPONSE FLATNESS $\pm 0.5\text{dB}$
- SWITCHING POWER SUPPLY

MINI TRUNK AMPLIFIER



- FORWARD 54-550MHZ RETURN 5-33 MHZ
- RESPONSE FLATNESS $\pm 0.25\text{dB}$
- AUTO SLOP AND GAIN $\pm 3\text{dB}$
- SWITCHING POWER SUPPLY

FERRORESONANT POWER SUPPLY



- HIGH RELIABILITY
- 6A9A12A15A



® PDX ANTENNA MASTER CO., LTD.

76, SEC 2, PEI SHIN RD, TANSUI TOWN TAIPEI
HSIEN TAIWAN. R.O.C.
TEL:886-2-6219600~2 FAX:886-2-6227157

Reader Service Number 67

Producing for the masses

By Lore Devra Levin Coy

The Indian cable programming and TV production scene is an action-packed arena where the pace is fast, furious and constantly in motion. There are more than 800 movies and telefilms made each year in India and the number of music videos, variety shows and documentaries is climbing well into the tens of thousands of hours.

According to one of India's largest private associations, the Indian Motion Picture Association in Bombay, there are over 3,000 members in the associations. According to the group's manager, Sha Shrank Jare, "Although not everyone is working for the cable television industry, more than 1,000 members are active in production for both television and cable television." Members range from small production and postproduction facilities to large, full-service studios.

Production in India is on a very different note than most countries. With a growing population of over 900 million, India needs to produce programming in a variety of languages. Although the lion's share is in Hindi, other key languages include Tammil, Kannada and English.

The players

At the strategic head of the production chain is Doordarshan, the government-affiliated television and broadcasting organization. Its production center is responsible for the production of various national and regional programs, including a diverse array of government-supported telefilms, TV serials, ballets, news programs, current affairs programs and news magazines. Its programs are produced both in-house in its full-scale production



facilities and postproduction facilities in New Delhi, as well as sourced locally from other production houses. With a vast staff and large studio facilities, it also provides teletext services to the public. Doordarshan's vast empire is run under the close guidance of its general director, R. Basu, in New Delhi.

Another large government-sponsored production group is the National Film Development Corp. (NFDC), an amalgamation of Film Finance Corp. and the Indian Motion Picture Export Corp. "(The NFDC) aims at bringing improvement in the quality of cinema in India and increasing its access (to the public)," says P. Sen Vyas, minister (P&J), Commission for India, Indian Embassy (Hong Kong). "It promotes the concept of low-budget films."

The NFDC has access to film professionals from all over the country, and produces well-scripted films directed by well-known directors. It also is responsible for importing and exporting films, and holds the annual Panorama Film Festival under the direction of the Directorate of Film Festivals.

The Ministry of Information and Broadcasting (MIB) in New Delhi is one of the chief regulatory organizations,

accountable for the overall control and supervision of Doordarshan and other film-making companies. It formulates policy and establishes regulations for controlling the internal (Indian) development of the TV, motion picture and cable TV industries. It also is in charge of dictating to the satellite and cable TV industries.

The Central Board of Film Certification certifies films in accordance with the provisions of India's Cinematograph Act of 1952. Responding to the need for specific government-sponsored programming is another government agency: the Indian Films Division, which produces news magazines, documentaries and films to be duplicated and distributed around the country. It is by far the largest national production agency. The chore of getting news, telefilms and other programming out to the various cable TV operators, however, is shared by independent operators.

In India, as with any large productive industry, there is always government input. In India, however, there are as many supportive agencies as there are regulatory ones.

With plenty of government organizations and ministries to regulate and dictate its activities, one would figure that the industry would be strangled. But this is not the case. Even the small, more rural independent production facilities, despite a lack of financial support, are able to effectively turn out hundreds of programs per year.

Programs from the smaller producers fulfill a need for inexpensive and localized programs. These are in turn generally offered to small cable operators. These predominantly one-channel operators are usually nothing more than a single (or bank) of VCR tape players. The abundance of low-cost programming provides a wider selection and is often provided in the local Indian dialect. At Audio Visual Pvt. Ltd., the Ajanta Complex, Sunil Doshi Sarawati is engaged in a variety of program productions. Although not a channel operator himself, the firm actively provides productions to local operators. In cable and video production, English is not a major concern outside urban areas. Hindi is still the language of preference in these centers.

Video figure

A leading media personality and important figure in the television and

Domestic satellite distribution

Channel	Satellite	Position	Service
Asia TV Network	Rimsat 2	142.5° E	PAL test signal
Sun TV	Rimsat 1	130° E	Tamil Service, PAL
AsiaNet	Rimsat 1	130° E	PAL service
Udaya TV	Rimsat 1	130° E	Kannada Service, PAL
Zee TV	AsiaSat 1	105.5° E	Hindi/English, PAL
Jain Satellite TV	Stationsar 21	103° E	Hindi/English, PAL
Doordarshan TV	Insat 2B	93.5° E	DD, DD2, DD4, DD6, PAL
Doordarshan TV	Insat 1D	82.9° E	Three PAL channels, one Hyderabad, PAL
Doordarshan TV	Insat 2A	74° E	Two PAL channels, one Madras, PAL

Source: Asia Pacific Space Report, September 1994, Hong Kong and Hiroyuki Nagase, editor/publisher, 1993.

FILTERS & ADDRESSABLE CONVERTERS

FOR WIRELESS CABLE & CABLE TELEVISION

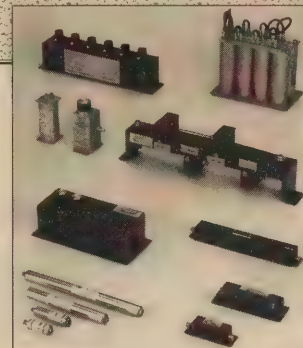
CATV

- Sharp notch filters for reinsertion without loss to adjacent channels
- Bandpass filters with varying selectivity for all VHF/UHF channels
- C-band terrestrial interference filters
- Negative, positive & tiering traps

Wireless Cable

- Channel combiners - both adjacent & non-adjacent
- Relay antennas - 21-24 dBi gain
- Couplers
- Video/audio diplexers
- Receive antennas 12, 15 or 18 dB gain
- Radar interference filters
- Off air/wireless combiners

The Comband CT-1000 Addressable Converter System



CATV Filters



WC Combiners



Addressable Converter

- Built specifically to handle fluctuating MMDS signal conditions.
- Utilizes six different methods of signal scrambling including the patented sync omission mode to prevent signal theft.
- 64 pay combinations and exclusive channel mapping, time based programming and tiers can be offered for system revenue enhancements along with pay-per-view and special events.
- Easy adaptability to ITFS switching requirements.
- Scrambles 62 channels - any combination of MMDS and UHF (LPTV) channels.

Manufactured in alliance with Samsung Electro-Mechanics

 **COMBAND TECHNOLOGIES**
DIVISION OF MICROWAVE FILTER COMPANY, INC.

 **SAMSUNG**
ELECTRO-MECHANICS

MFC

MICROWAVE FILTER COMPANY

6743 KINNE STREET
EAST SYRACUSE, NY 13057
800-448-1666 • 315-437-3953
FAX: 315-463-1467

For more information request Catalog WC/94, C/91, MTV/91, Notcher/90, Fastrap/90 and the CT-1000 data package.

THE KEY TO SYSTEM SUCCESS.....

WIRELESS CABLE MMDS PRODUCTS

from



18 YEARS EXPERIENCE

Conifer has designed and built premium television reception products since 1977, far longer than all others in its field.

SERVICE & SUPPORT

Conifer's dedication to continuing customer support plays a major role in the success of its customers.

INNOVATIVE TECHNOLOGY

Conifer's development of products for digital compression, interactivity, and unique frequency applications provides endless opportunities for wireless cable systems worldwide.

QUALITY PRODUCT

Conifer's manufacturing philosophy yields consistently performing, high quality products, which are backed by an exclusive Two (2) and Five (5) Year Warranty.

video revolution has been Amit Khanna. An active producer, filmmaker and journalist, he has been the unofficial spokesman for the industry for over 10 years. His organization, Plus Channel Ltd., produces films, telefilms, variety programs and more. Programs are marketed to a number of small cable operators and cable networks as well as the nation's government-directed Doordarshan.

According to Cheria Chacko, its program executive: "Plus Channel is involved in TV and video broadcast, software production and distribution. It is the only Indian company which has a daily show on television and produces three monthly video news magazines: *Business Plus*, *People Plus* and *Hollywood Plus*. (It has done this for three years.)"

The company has a fully fledged Betacam studio and postproduction facility with a computer graphics division in Bombay, production facility in New Delhi, and crews in Calcutta, Bangalore, Madras, Hyderabad and Ahmedabad. India's leading film maker, Marash Bhatt, is the creative director of Plus, which produces six separate programs each week: news, fashion/travel, variety, soaps and a Hindi music program. This is in addition to its daily business reports and monthly news reports.

Other active and important medium-sized India producers include Nimbus Communications Pvt. Ltd. (Bombay) run by Hanish Thawani, and Cinevista (Bombay), a joint partnership under the direction of Cunil Neta and Prem Krashen.

Larger groups such as Zee TV, Sun TV, Jain TV and AsiaNet independently produce films and programs, and operate their own studios, production and postproduction sites, as well as their own cable TV channels. To reach the masses in India, and effectively deliver their products, both traditional cable and satellites are used.

This last group of firms produces thousands of hours of programming, beaming their channels via satellite around the country. Not to be left out, Doordarshan also can be found on a variety of satellites (see table, page 32). **IC**

Lore Devra Levin Coy is director of Associated Asia and currently a resident of Tainan, Taiwan. She has over 20 years experience in communications from the marketing, advertising and promotions areas. Through her work in the U.S., Europe, the Middle East and Asia, she has specialized in computers, telecommunications and consumer electronics since 1980.

CONIFER CORPORATION

1400 N ROOSEVELT • P.O. BOX 1025

BURLINGTON, IOWA 52601 USA

800-843-5419 (U.S.) • 319-752-3607 (INT'L) • FAX 319-753-5508

Reader Service Number 63

QUALITY DOESN'T NEED WORDS



Times Fiber Communications, Inc.

Division of Amphenol Corporation

358 Hall Avenue • P.O. Box 384 • Wallingford, CT 06492
(203) 265-8500 1-800-677-CATV FAX (203) 265-8422

USA Networks' Latin twist: Market customization

By Alex Swan

In describing her network's new programming initiative in Latin America, USA Networks International Chairman and CEO Kay Koplovitz balances enthusiasm with realism: "We see ourselves as entertainers and we're looking to expand the spirit of USA with the programming we think is applicable. At the same time, we're introducing market-specific programming that we think will be enjoyed by our audiences. It's a very exciting challenge."

USA, which launched as Madison Square Garden Network in 1977, was the first U.S. advertiser-supported basic cable service. It has consistently been one of cable's most watched networks.

Although some of its programming has been available for over a year in Spanish to U.S. audiences, via a second audio program (SAP) channel, it wasn't until April 29 of this year that USA America Latina was launched. With berths on PAS and Solidaridad satellites, it now reaches about 2 million cable, MMDS and SMATV households, primarily in Mexico and Argentina. To date, its

"Our goal is to produce as much original and first-run entertainment programming in prime time as possible."

USA | NETWORKS

programming has looked and felt like its domestic counterpart, except that it sounded different. Since launch, all its programs, except one English-language business show, have been dubbed into Spanish. More topical programs like *Entertainment Tonight* and *Hard Copy* are simultaneously translated to air.

Starting Nov. 21, USA's new fall lineup takes a big step toward customizing itself for the Pan-Latin market. "Our goal is to produce as much original and first-run entertainment programming in prime time as possible," says USA Networks International Executive Vice President and Managing Director Rafael Pastor, the man charged with the network's growth as well as with USA's further international plans. Pastor joined USA a year ago, after several years as a key member of Murdoch's News Corp. team. Most recently, he served as executive vice president of Fox International, working on its projects in Europe, Asia and Latin America, and played the lead role in launching Fox's Latin America Network in 1993.

Initially, 10 new programs will beef up USA's evening schedule in Latin America, including two new programs produced in Mexico for USA: *Jaime Camil Internacional*, a weekly Spanish talk show featuring celebrity interviews and hosted by Jaime Camil (a young and rising Latino heart-throb), and *Alto Riesgo*, (or

High Risk), featuring an enterprising thrill-seeker nick-named "El Cuas" (loosely translated "maybe he'll make it, maybe he won't"). El Cuas performs difficult and dangerous feats from exotic locales, often with mixed results — sort of a cross between Eddie the Eagle and Evel Knievel.

In addition, USA is taking its animated series *Duckman* and, rather than dub its U.S. brand of satire into Spanish, is adapting it into a distinct Spanish-language version, with recognizable Latino comedians and topical humor.

"We've stayed true to the cutting-edge spirit of the series and have tailored it so that the humor is relevant to Latino audiences," explains Mauricio Gerson, director of programming for the network.

Gerson should know, prior to joining USA America Latina earlier this year, he spent six years rising through the programming ranks at Telemundo, scheduling, acquiring all network programming and serving as liaison with the network's owned and operated stations.

Along with these original productions, USA America Latina is debuting other first-run programming, including *Seaquest DSV* (starring Roy Scheider), its original series *Weird Science*, *FBI: The Untold Stories* and its audience-grabbing Tuesday night boxing and World Wrestling Federation (WWF) *Monday Night Raw* matches.

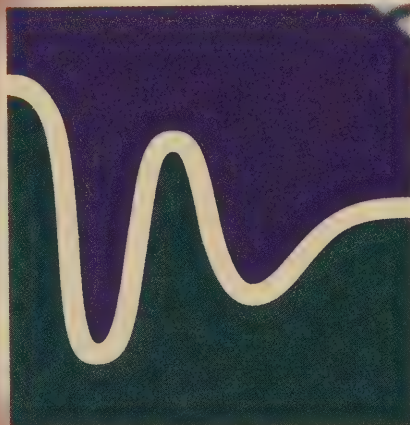
To further distinguish itself from the competition, USA America Latina runs an eight-hour block of programming with an additional four-hour repeat from its sister network, The Sci-Fi Channel, on Saturdays. It's a way to deliver added value to viewers and advertisers and a way to market test the sci-fi/fantasy genre with Latino audiences.

It's also part of USA's plans to exploit the programming clout of its corporate parents, entertainment giants Paramount and MCA, by exporting programs internationally. Entering the Latin American market



Rafael Pastor, executive vice president and managing director of USA Networks International.

We Can See The Future.

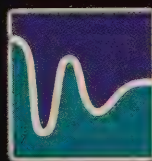


Pacific Monolithics has built a reputation based on the performance and quality of our MMDS downconverters. We also recognize that the marketplace is changing rapidly. Our technology can help you stay ahead of the pack.

Wireless communications has been our business for over ten years. We've designed components and systems for applications that include defense, global positioning satellites, automotive sensors, cellular and cordless telephony and wireless local area networks. The application of our technology has resulted in products that have changed the competitive landscapes in these markets - worldwide.

Simply put, we understand the nuances of wireless video, voice, and data systems. And, we're uniquely positioned to participate in the convergence of these technologies into the integrated infrastructure that's coming.

Experience, innovation and dedication are the keys to the future. We can help you make the right choices...for today and tomorrow. Call us at (800) 949-0990 or send us a FAX at (408) 732-1830. Let Pacific Monolithics show you the future of MMDS.



**PACIFIC
MONOLITHICS**

Solutions for Wireless Communications

245 Santa Ana Ct, Sunnyvale, CA 94086-4529. Phone (408) 732-8000 Fax (408) 732-1830



Hispanic actor Ruben Rabasa fills Jason Alexander's role in USA America Latina's Spanish-language adaption of "Duckman."

later than other established basic U.S. programmers like Turner, MTV, Discovery and ESPN, USA is more interested in timing its entry to coincide with market maturity.

"There's no need to rush into every market right away, given the kind of services we're dealing with. What's important is to know what you're doing and enter the market at the right time with the right product," notes Pastor. Indeed, the Latin American market has been showing distinct signs of growth potential for some time now, especially since the NAFTA trade agreement.

Growth promotes growth

The vast majority of USA's 2 million Latin American subscribers gets the signal on basic cable, including a small number from MMDS and SMATV. However, just two countries, Mexico and Argentina, where Spanish is the primary language and cable has the highest pene-

tration, make up the vast majority of viewers. As an area, Latin America has around 80 million TV households. Cable's share of that number is sketchy, with estimates ranging anywhere from 5 to 10 million. By far the largest and as yet untapped market, however, is Portuguese-speaking Brazil, with over 160 million people and 32 million TV households. That plum audience is still down the road for USA America Latina according to Pastor, who cites rights clearance and second language audio as significant factors. Meanwhile, although they're not releasing numbers, the dual revenue streams from 2 million subscription homes and the growing ad market is cause enough for USA's increase in original and first-run productions.

In its advertising efforts, USA has partnered with two Latin American players, Multivision of Mexico and Produfe of Argentina. Aided by the market's growing maturity and the NAFTA effect of encouraging local companies to grow and North American companies to bring in their business, USA and its local partners are starting to see significant lift selling the network's eight minutes of ads per hour to both panregional and local country advertisers.

Although USA entered the market late in the broadcast year, to date it lists among its sponsors accounts like Budweiser, which sponsors Tuesday night boxing, and Chrysler with the Sunday night movie.

"Just as when cable started opening up in Europe, so too it's a very exciting time for us right now in Latin America," says Barry Frey, USA America Latina's managing director of international ad sales and an industry veteran. "Advertisers are beginning to have more places to go, so they can target more desirable consumers and get better pricing for their ads than ever before. They used to be beholden to two or three major stations that dominated the marketplace, but no longer."

Pastor makes it clear that Latin America is just the first step. "We have two very strong brands — USA, which is a general entertainment service, and Sci Fi Channel, which is more thematic. Both of them we believe are fully support-

"We have two very strong brands ... both are fully supportable as 24-hour networks."

able as 24-hour networks. First, however, we need to determine which is the right brand for which market. So just as we launched with USA in Latin America, we are more likely to launch with Sci Fi in Europe, and in parts of Asia and Australia, we may go with different brands in different places."

Expansion obstacles

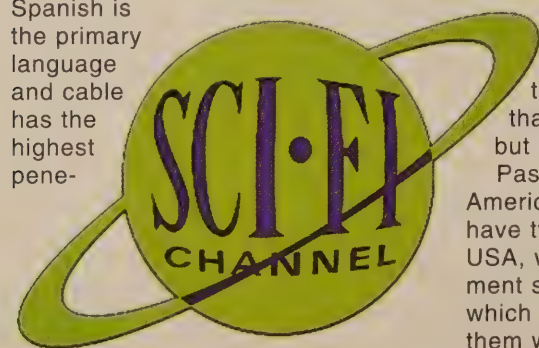
Just as the ripe Brazilian market remains unpenetrated by USA to date, so too in Europe and the many parts of Asia, many obstacles remain. It's a tricky proposition taking any North American product overseas these days, no matter how strong its brand.

In Europe for instance, quite apart from the need to customize and create programming to meet specific marketplace languages and tastes, there is the even more daunting issue of program rights. Many movies or hit series that USA airs domestically may have been sold to any number of different national and local broadcasters, creating a maze of country-by-country rights problems or simply serving to limit the material and lessen the appeal of what's left.

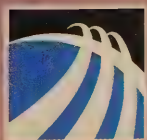
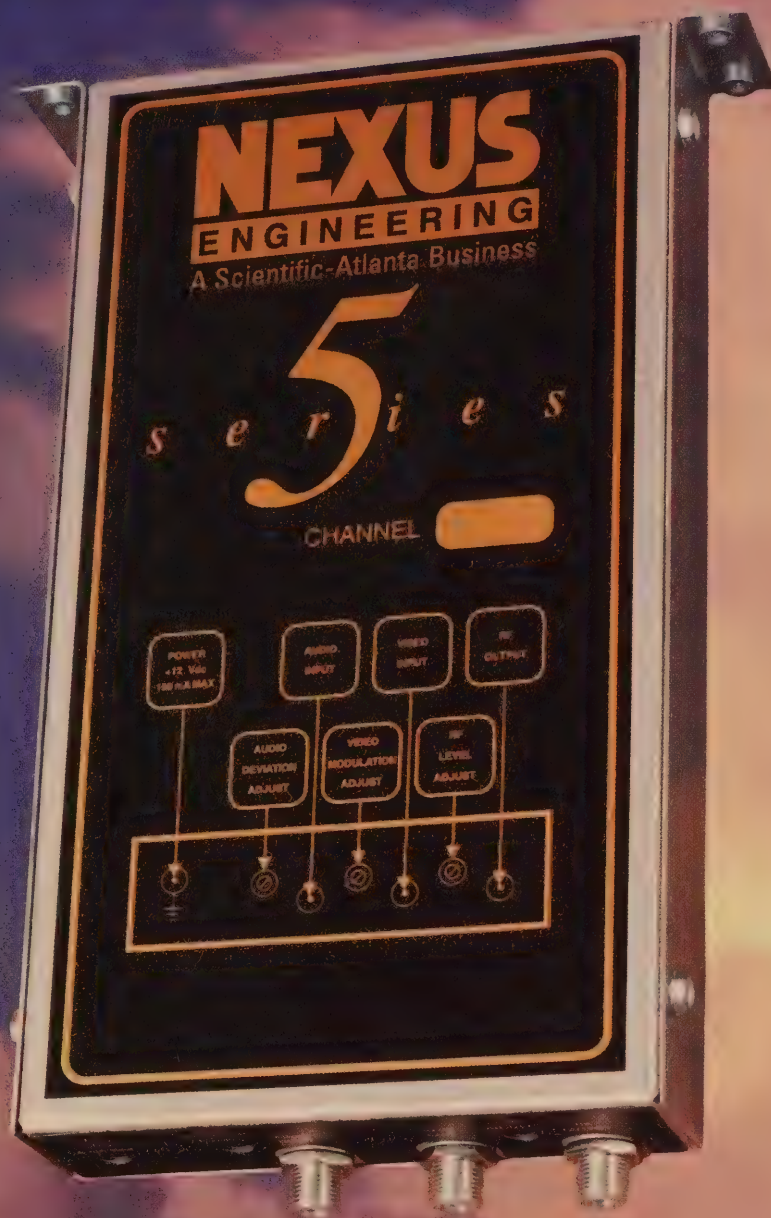
There's also the issue of Pan-European advertising, or for that matter, pan-anywhere advertising. Some ads just can't run in some places, either because of content restrictions, product unavailability or campaign strategies. It varies dramatically from country to country. For instance, a product packaged as a luxury in one market may be sold as a staple in another; one ad can't convey both messages.

Despite all this, the brass at USA remains upbeat. The future lies in international expansion. What's next? Don't be surprised to see the Sci Fi Channel beaming down across Europe early in 1995 — or as Captain Kirk would say, "Full ahead Mr. Sulu, warp speed 10." **IC**

Alex Swan is the new editor of International Cable.



PERFORMANCE



Scientific
Atlanta

404/903-6327
Fax: 404/903-5375

new COMPETITIVE PRICING

Reader Service Number 86

NEXUS
ENGINEERING
A Scientific-Atlanta Business

604/420-5322
Fax: 604/420-5941



Challenges for European regulation

By Philippe Olivier Rousseau

The construction of a true Pan-European media market should remain a priority and become a reality, even though today it appears only a possibility, if not sometimes a fiction. More important, with respect to media matters, Europe cannot exist by itself, splendidly isolated in the complex world of electronic distribution, but must clearly define its position within the global media community.

In this article (which reflects only my personal opinion), I will elaborate on three topics, which all focus on the fundamental European text, the Europe Without Frontiers Directive. First of all, I will review the basic principles that constitute the backbone of this text. Next, I will consider some improvements that could reasonably be included in the short term. Finally, I will concentrate on the effects of this text and the way it should, in my view, evolve to take into

account the challenges of the near future.

The basic principles

The Television Without Frontiers Directive can be considered the origination of a free Pan-European media market. It was developed after long discussions during the '80s, and was first released in 1989. It was decided that this text should be reviewed five years after being released; therefore this was the year for renegotiation.

The philosophy of the European Commission (EC) in the mid-80s was that the media sector was to be considered according to three aspects: 1) regulatory (application of the treaty provisions establishing the European Community and pertaining to free movement of all services); 2) programming (treated in the media program, whose purpose is to develop the national and European production industries); and 3) technological (with support to the HDTV

program and eventually digital TV).

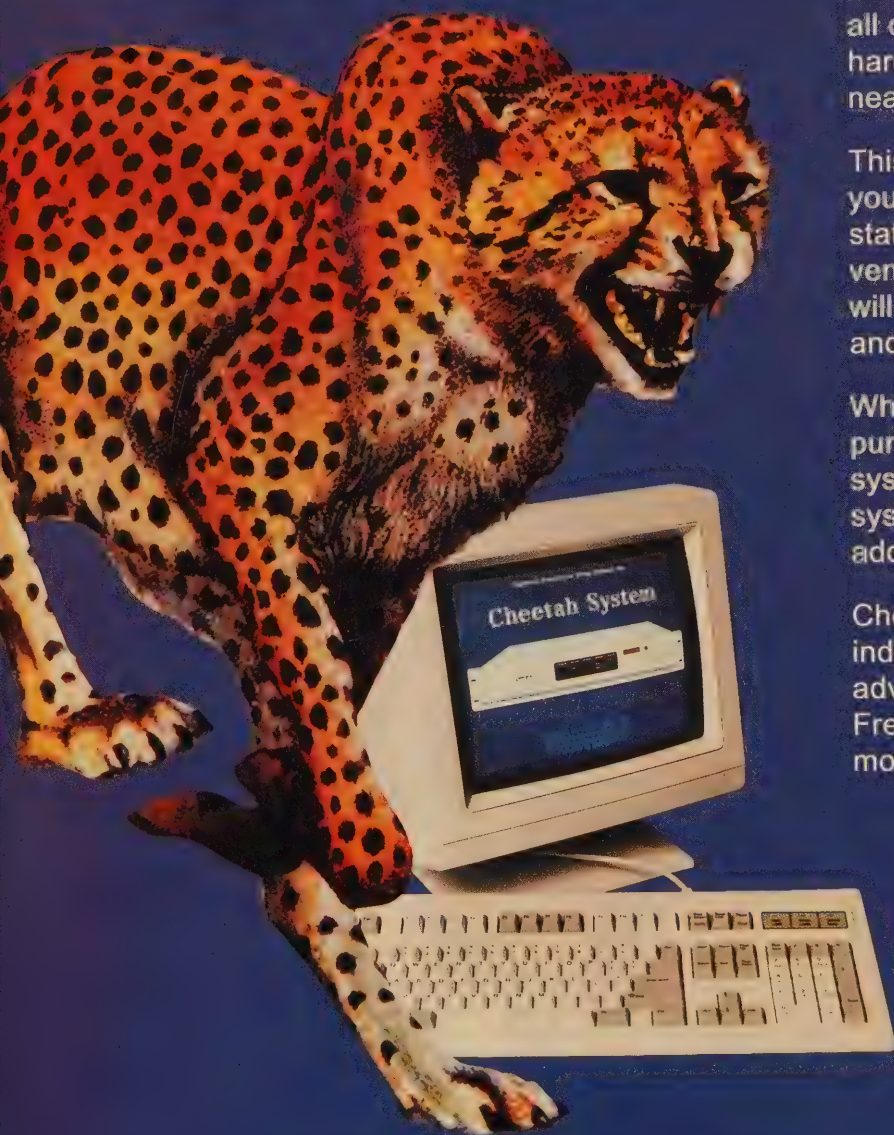
The directive is based upon five fundamental principles:

1) *Free circulation of services*: The first assumption is that all TV services should basically be allowed to be commercialized and circulate freely among the countries of the European Union (EU). It is based on the principle that satellite TV services should be granted a unique license by the country from which the channel originates. In particular, with respect to editorial and programming content on the one hand, and to obligations in terms of production investments on the other hand, there is clearly no such thing as a control by the receiving country.

However, the EC's position recently seems to have evolved slightly on the matter of copyrights. If this move were confirmed, it would mean, first of all, a lack of consistency in the European policy; second, more constraints for European broadcasters; and finally, a

Cheetah offers the flexible status monitoring solution.

Monitor any major manufacturer's equipment.



Cheetah offers independence from the OEM trap. Based on an open architecture, Cheetah's universal transponder will monitor any major manufacturers equipment -- fiber nodes, amplifiers, or power supplies.

In comparison, OEM status monitoring systems are designed to monitor only that manufacturer's hardware. The problem is that nearly all cable systems have some mix of hardware vendors - or will in the near future.

This means that for every vendor in your plant, you will need a separate status monitoring system. Each vendor's status monitoring system will require a distinct data channel and a separate computer.

What does this mean to you? If you purchase the OEM's status monitoring system and want to maintain a single system, then you will be trapped into adding their equipment in the future.

Cheetah offers complete vendor independence and allows you to take advantage of the latest technology. Free yourself from the OEM status monitoring trap with Cheetah.

**For more information
on the Cheetah System
call
(813) 756-6000**

SUPERIOR ELECTRONICS GROUP, INC.

6432 Parkland Drive • Sarasota, Florida 34243 • Phone (813) 756-6000 • Fax (813) 758-3800

Come see us at the Western Show booth #2505 Reader Service Number 93

step back in the process of building a unified market.

The directive can be considered a minimum set of rules necessary to coordinate the various existing national regulations. Each country is free to adopt a higher level of obligations. The text applies to any broadcaster either under the jurisdiction of a member state or making use of a frequency or satellite capacity granted by — or a satellite uplink situated in — a member state.

2) *Protection of the European production industry*: The idea is that the "natural" laws of the market could lead to a highly dominant position of non-European programming. Therefore, the market has to be helped. The quotas are defined in terms of transmission time percentage and are, at the moment, 50% of "European works". (The definition of the "European work" concept varies from one country to another. In particular, under the directive's terms, it is unclear whether it applies strictly to fiction and documentaries, or whether it also could include talk shows and magazines.)

These quotas can be implemented with a great flexibility since Article 4 stipulates that member states shall ensure them "where practicable" and that they "should be achieved progressively, on the basis of suitable criteria."

Furthermore, a minimum of 10% of the transmission time and at least 10% of the programming budget has to be dedicated to independent producers.

3) *Protection of the motion picture theatrical release industry*: It also has been decided that the theatrical release of movies should be protected (regardless of which country produced the movie). Therefore, movies cannot be displayed on a TV channel until 24 months after the movie has been released in Europe (with a possibility of 12 months in cases where the broadcaster co-produced the film).

4) *Advertising*: Some products are banned from advertising, including tobacco and medicinal products available upon prescription. Alcohol is under severe constraints.

Advertising time is limited to 12 minutes maximum per hour. The number of advertising interruptions also is strongly limited, in particular in the case of news or children's programming. The total amount of advertising should not exceed 15% of the total daily transmission time.

5) *Content*: The content of programming also is under severe monitoring.

"Ownership regulation is today at least as important as content regulation, and will be more important in the near future."

The directive bans obscenity (although Article 22, which concerns pornography, is sometimes considered ambiguous). The directive also restricts violence, and protects children, adolescents, privacy and human dignity.

Immediate improvements

The European Directive is in the process of being reviewed. The new version should be completed by the end of this year. The following short-term improvements should, in my opinion, definitely be included within the new text:

1) Adapt the text to new services:

The directive clearly does not take into account the development of some "new" services (meaning services that have not yet been commercially developed in Europe). For instance, a full-time home shopping service is forbidden on a Pan-European level. To be more specific, a one-hour-per-day home shopping programming is allowed on terrestrial channels, while full-time home shopping programming would be allowed on a cable and satellite channel, provided this channel is scrambled and strictly limited to one specific EU country, without any overlapping with other countries.

In a similar fashion, pay-per-view (PPV) is strictly regulated. There are no specific arrangements concerning PPV in the directive, meaning the general regulation will apply — in particular, the 50% European programming quota.

The question then is: There are no quotas applicable to video leasing and sale nor to theatrical programming, so why should there be any for PPV, which is quite similar in terms of service provided to the consumer?

In France, PPV services will be subject to the same quotas as the TV channels: 60% of the programming time dedicated to European material, and 40% to French-produced material. The calculation will be based on effective transmission time, and not on the number of movies. Some black-out periods also will apply to PPV (for example, movies

should not be shown on Friday evening).

Finally, a window for PPV exclusivity needs to be established. Currently, the French government is proposing a one-month window from the 11th to 12th month after theatrical release. On the 11th month, the movie could be offered both on video and PPV. On the 12th month, it could be shown on a TV channel, provided the channel was a co-producer.

2) *Production investment should gradually replace the broadcasting quotas*: The French government recently proposed lowering quota levels and increasing the investment channels should make in new production. This measure seems to go in the right direction, although its economic impact should be accurately evaluated.

3) *The level of obligations for the TV channels should take into account, first of all, the economic development of the channel*. The same level of obligations should not apply to both family oriented channels that have existed for years, are fully advertising-supported, have high viewership and are making profit; and to theme channels that are strictly subscription-funded, have just been created, are still looking for their audience and obviously are losing money.

It seems to me the role of the governments and regulatory bodies, wherever they exist, should be first to help the economic development of the channels, and then, once mature, to consider if a contribution from these channels to the national and European production industry is economically reasonable and would effectively contribute to its development. The programming format could also, in certain cases, be taken into account.

Second, the size of the country should be considered. Should we maintain the fiction that Ireland or Portugal, which to say the least don't have strong TV production industries, can be expected to respect the same level of constraints applied to France or the U.K.?

4) *Cross-media ownership*: There is currently no European regulation limiting ownership of different media (written press, radio, terrestrial broadcast, cable and satellite channels). A green paper has been published that gives an excellent overview of the current situation, but unfortunately does not provide any clue to improve it.

In the U.K., Rupert Murdoch, who has been extraordinarily successful, has a dominant position in the cable and

MICROWAVE TECHNOLOGY



H A S N E V E R B E E N S O P O W E R F U L

Reader Service Number 20.

For over 20 years Hughes AML has provided microwave trunking solutions to the Cable Television Industry. As the world leader in the design and manufacture of AML systems, Hughes' installed base has over 150,000 channels delivering high quality, reliable signals.

From Super High Power Indoor Systems capable of supertrunking over 25 miles, to Compact Outdoor Transmitters, Receivers and Repeaters, the Hughes product line can provide the answer to your trunking requirements.

To find out what the leader in microwave transmission systems can do for you, call HUGHES AML.

Telephone: (204) 949-2400

Toll Free in North America:

1-800-663-7902

Fax: (204) 889-1268

HUGHES

BROADBAND MICROWAVE SOLUTIONS FOR TODAY AND TOMORROW

satellite programming market and also owns more than 40% of the written press (including the prestigious *Times*). In Germany, the Bertelsmann Group has equity in all of the leading commercial channels, both advertising- and subscription-funded, and also occupies a predominant position in the newspaper business.

It is my opinion that ownership regulation is today at least as important as content regulation, and will be more important in the near future.

5) *Encryption and access control systems*: If the economy of tomorrow's TV distribution industry is based on the gateway principle (which looks probable but of which I am not totally convinced), then ownership and control of the decoders and descramblers will literally be the key to the whole system. The emergence of digital techniques also will introduce a new deal situation that might weaken the positions of the existing players in the field of pay TV (basically three on the European market: Filmnet in Scandinavia and part of the Benelux; Canal Plus in France, with local partnerships in Belgium, Germany and Spain; and BSkyB in the U.K.).

The new directive should address the problems of whether a common European encryption system should be defined (which would mean a single decoder/descrambler for all of Europe), and whether a plurality of access control systems should exist. I am personally in favor of a unique European encryption system and free choice in access control.

Essential contradictions

The current directive faces three major contradictions, and it's possible that the new version will not totally resolve these issues.

The first contradiction is the existence of a legal environment centered around public TV vs. the principle of free exchange of services. When the first draft of the directive was developed, back in the early '80s, commercial TV (by that time advertising-supported) was a new concept in Europe (with the U.K. the only exception). The text was therefore built in compliance with the governmental view that public TV (television exclusively or mainly sponsored by public subsidies) was the center of the whole TV environment, and that commercial TV would complement this basic offer.

When commercial TV first appeared, the number of private channels was

"The new directive should address the problems of whether a common European encryption system should be defined ... and whether a plurality of access control systems should exist."

quite limited. These new entrants were subject to "public interest" constraints that were directly derived from those of the public channels.

Fifteen years later, the environment has totally changed and commercial TV, whether advertiser- or subscription-sponsored, has widely overtaken public TV, both in terms of audience share and global revenues.

On the other hand, and as pointed out previously, the directive assumes there should be no barriers to the free exchange of TV services — hence, its name, Television Without Frontiers.

The main consequence of this contradiction is that the directive was not adapted to either the new entrants (such as Canal Plus, BSkyB or the Berlusconi channels) nor to the new technologies (the text assumed that satellite delivery would complement the basic terrestrial programming offer).

The updated directive should acknowledge the reality of the broadcasting market economy and therefore include provisions pertaining both to competition conditions, and to media ownership and anti-concentration (including cross-media ownership as stated previously).

The second contradiction is the myth of a Pan-European market vs. the reality of European markets. The directive is based on the hypothesis that the European TV market is homogenous and transparent, or that it will become so as soon as a common regulatory basis exists.

This is clearly a double myth: first of all because the market is not totally shaped by the regulatory environment, and secondly because the reality of the European TV market was and remains a collection of small- to medium-size independent submarkets.

In particular, and apart from the linguistic and cultural discrepancies, huge

disparities remain among the various EU countries with respect to the size (and in some cases the existence) of a national production industry, as well as the number of multichannel households (households receiving either cable TV or direct-to-home satellite programming).

Furthermore, most of the main European TV operators are predominantly national, not European or international. In terms of size, amount of risk taken and amortization of their investments, the major European media players remain desperately national. The structure of the capital does not change the reality of the market, which is domestic.

The consequence is that most main European media players are in a dominant position in their national market. This is the case for Berlusconi in Italy, Rupert Murdoch in the U.K., Canal Plus/TF1 in France (the first one covering the pay TV market, the second being the largest commercial TV operator, with more than 50% of the total TV advertising investments), and finally the Bertelsmann/Kirch group in Germany.

All of these groups however, with the two exceptions of Canal Plus and the CLT, did not try to conquer new markets in Europe. None of these groups — with the exception of Rupert Murdoch's News International (but can news reasonably be considered European?), and more recently the public-owned BBC — ever tried to conquer non-European territories, such as the Americas or Asia. Overall, the European broadcasting industry seems to lack the competitiveness and global strategy of U.S.-based media players.

This is, in my opinion, one of the most important criticisms that can be made of the current directive: It overregulates the European market by assuming that these measures will help protect the local industry, and gives strictly no incentive to the operators that would make efforts to internationalize the European production and broadcasting industry.

The assumption that the situation will improve for European players only if the exchange of services is made easier on the supposed European market is an illusion.

The basic European problems remain on the one hand its hypersegmentation, and on the other hand the disparity between programming supply and demand. Should I dare ask the following question: Is the scale of resources available in Europe sufficient to support the production industry as shaped today? →

RIDE THE INFORMATION SUPERHIGHWAY...

MINIMUM
SPEED
LIMIT
1GHz

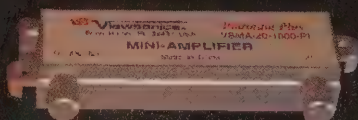
...AT FULL SPEED

MINIMUM
SPEED
LIMIT
1GHz

1 GHz ACTIVES & PASSIVES

MINI-AMPLIFIERS

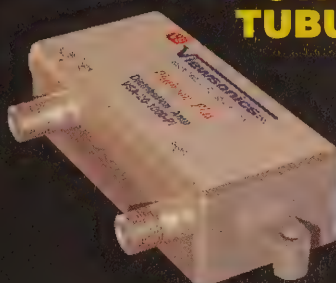
**45MHz-1GHz
130dB RFI**



USA Penny



STANDARD & TUBULAR AMPS



SPLITTERS



**HIGH GAIN AMPLIFIERS
(550MHz)**



ADAPTORS & INSERTER



All Platinum Plus amplifiers are in tin plated and solder sealed housings, producing a high degree of anti-corrosive protection, along with superior conductivity and RFI.

VS

Viewsonics

6454 E. Rogers Circle, Boca Raton, Florida 33487 USA • 1 800 645-7600 • 1 407 998-9594 • Fax 1 407 998-3712

Reader Service Number 48

And if the answer is no, how could these two worlds co-exist: the production world, that would be directly or indirectly subsidized by the governments, and the broadcasting world that would be under the law of free market?

The third and final contradiction is: the real challenges today are international development and new technologies, and the directive assigns none of them.

Where is Europe on the international scene? It is a fact that the Asian market (and, to a lesser extent, the South

American market) develops at a much faster rate than the European market. It is another fact that the strategy of any important media actor today has to be international.

However, the level of European regulation remains one of the highest (if not the highest) in the world. The result is that Europe is becoming a protected market, these measures being politically justified by the necessity to protect our culture. As discussed previously, the result is that these protective measures

hinder the development of the European broadcasting industry on a global level, this is to say, where the market is.

Because it is overprotected, our production industry does not make the necessary efforts to restructure, to gain competitiveness and to enter new markets. The reality of the market for European producers today, whether motion picture or television, is neither European nor international but national. During the past few years, most efforts to export our programming have been initiated by governments, which widely subsidized them. This means that international development is not an important part of the corporate strategy of European TV producers.

Because they have to abide by an impressive set of rules, European broadcasters concentrate on their national markets and do not develop in the global market. The risk is that the presence of European production on the international media scene is limited to the *festivals d'art et d'essai*.

The technological challenge revolves around digital technologies bringing the television and telecommunication industries closer together than ever. The classic distinction between systems and service providers is more relevant than ever.

The development of digitally compressed TV on the one hand, and of the new electronic and information highways on the other, should lead to the standardization of a gateway system (even to distribute advertising- or government-sponsored channels).


With respect to the system providers, the question is: Which measures should be taken to ensure that fair competition will exist and that there will not be misuse of a dominant position? The question of access to the distribution infrastructure, and in particular to the decoder/descrambler technology, is crucial.

It is my belief that these technological and industrial aspects — and in particular the issues of encryption and access control, and access to the electronic distribution infrastructures — should definitely be included in the next version of the directive.

With respect to the service providers, competition is much easier to implement and guarantee. Service providers should be guaranteed access to the electronic infrastructure, in compliance with the usual commercial rules.

A new legal environment for cable and satellite services should be elabo-


A WORLD SERIES



MODULATORS • SIGNAL PROCESSORS • DEMODULATORS
DIGITAL QPSK / QAM MODULATORS • ANTENNAS / PREAMPS / ETC

SUITABLE FOR CATV - SMATV - MATV - MMDS - LPTV
BROADBAND LAN WORLDWIDE FOR ALL TELEVISION STANDARDS
B/G - D/K - I - M/N IN NTSC - PAL - SECAM COLOR

MANUFACTURED IN AMERICA WITH PRECISION, RELIABLE
SURFACE MOUNT TECHNOLOGY AND SOLD WORLDWIDE



BROADBAND COMMUNICATIONS

2405 S. SHILOH ROAD
GARLAND, TEXAS 75041

1-800-877-2288
FAX 214-271-3654
214-271-3651

Reader Service Number 69

rated that would clearly separate and identify the three following functions: 1) editorial (creating the channel programming), 2) technical distribution (cable/satellite) and 3) commercialization of the services to the end-user.

Finally, I would like to mention another concern. Because of the national and European telecommunication regulations on the one hand, and the current political environment and trends on the other hand, there are risks that the electronic distribution infrastructure monopolies will be maintained or even reinforced. There are few chances that deregulation of telecommunications will be fully completed in Europe by 1998.

Even worse, the risk is high that, in the field of telecommunication infrastructure and services, Europe will move from public to private monopolies.

Conclusion

I would like to summarize some basic facts and principles that should, in my view, lead to a substantially new version of the European media regulatory corpus:

1) The directive should tend to build a Pan-European media market, but recognize that this is not a reality so far, and that the economic, cultural and linguistic disparities make this a long-term more than a mid-term objective.

2) Because of the generalization of satellite and digital technologies, and increased international competition, the application of broadcasting quotas will become harder and harder.

3) In its actual configuration, the directive is strictly focused on Europe, and does not envisage the situation of Europe on the global market. This text could appear as reactive more than pro-active. The future directive should become offensive rather than strictly defensive. In particular, it should assist producers and broadcasters willing to compete on the worldwide market and not just implement quotas to protect the European and local production industry of its own market.

4) There is indeed a contradiction between governmental sponsorship of the national and European programming industry, which could be justified by cultural reasons (in a similar fashion, nobody opposes the public funding of opera or museums), and the liberalization of the broadcasting conditions.

5) Finally, the text should recognize that the European broadcasting market today is mainly made of private players,

We're Taking Steps to Ensure Your Future.



With our innovative products and technology, Echosphere Broadcast Systems Group is taking a giant step into the digital future. Our knowledge and experience provides you with complete turnkey system design and equipment procurement.



The Wave, our integrated downconverter and antenna, provides superior reception at an affordable price. Its digital readiness gives you the advantage when you take that step into the digital era.

ECHOSPHERE
Broadcast Systems Group

Telephone: 1-303-799-8327
Fax: 1-303-799-8878
90 Inverness Circle East
Englewood, CO 80112

Reader Service Number 70

and that public TV is not in a dominant position anymore.

The consequence is that a brand-new corpus of laws and regulations should be enacted concerning the conditions of media competition on the one hand, and media ownership (including cross-media ownership) on the other.

It is my personal belief that the regulation of media ownership and competition in Europe should gradually overtake and eventually replace the regulation of programming content. **IC**

Phillippe Olivier Rousseau is commissioner of Conseil Supérieur De L'Audiovisuel in France. He joined the Societe Francais Production in 1980, then from 1982-84 was in charge of the Los Angeles office where he managed international co-production and program distribution matters, and eventually became director of international affairs. In 1990, Rousseau moved to Eutelsat, where he served as director of television and radio services.

Where should you be January 4-6, 1995?

Attend the Society of Cable Television Engineers'

1995 CONFERENCE ON EMERGING TECHNOLOGIES

JANUARY 4-6, 1995

STOUFFER ORLANDO RESORT

ORLANDO, FLORIDA

Ongoing changes within the cable and telephone industries confirm the importance of being at the forefront of future technological advances. SCTE's 1995 Emerging Technologies Conference will inform attendees on the latest developments and trends within these industries. Topics will include:

- *Digital Compression and Alternative Transmission Techniques*
- *Telephony and the Cable Industry*
- *Broadband Multimedia Via Cable*
- *Technology Migration Into the Future*

Join the more than 1,200 expected attendees at what is considered to be one of the most important conferences offered for cable engineers, executives, manufacturers and consultants in the broadband communications industry.

To receive your 1995 Emerging Technologies Conference Registration Package, contact SCTE National Headquarters at (610) 363-6888 or FAX to (610) 363-5598.

OVER 1,200
ATTENDEES
EXPECTED!

OVER
25 TELE-
COMMUNICATIONS
INDUSTRY SPEAKERS!

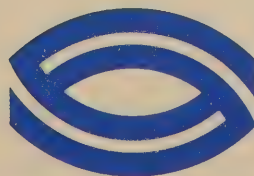


Leader in PAY TV SYSTEM with 5 Million SYSTER decoders sold all over the world, GROUPE SAGEM is also marketing a full range of satellite receivers.

Today, GROUPE SAGEM is extending its activities in the field of digital television and is developing a complete DIGITAL SYSTEM, from the encoder to the decoder, fully compliant with MPEG2/DVB international standards.

Come and see
GROUPE SAGEM
at Cable and Satellite
Asia 94, Hong-Kong
Convention and
Exhibition Centre
1-3 Dec 1994, stand C7 :

our innovative open
architecture system offers
you a flexible and economical
digital broadcast solutions over satellite
and cable networks.



GROUPE SAGEM

SAGEM
SAT
SILEC
EURODEC
DIVICOM

B.P. 421 - 95527 CERGY PONTOISE CEDEX - FRANCE
MARKETING AND SALES DEPARTMENT
Tél. : 33 (1) 34 24 61 60 - Fax : 33 (1) 34 24 86 63

Encom: A profile of success

By Stewart Wittering

Nineteen ninety-three was certainly a year Encom will remember: 1,000 kilometers of fiber-optic cable were laid, 100,000 additional homes were passed, its customer account base trebled, it installed the first live cable-owned switch in London, network interconnection agreements were signed with both BT and Mercury, a new franchise was acquired, 1,000 new jobs were created, and Channel One was launched.

Encom began trading back in 1987 as East London Telecommunications, following the issuing of a license by the Department of Trade and Industry (DTI) and the Independent Television Commission (ITC) to provide cable and telephony services throughout east and south-east London, Essex and the parts of Kent closest to London, an area of some 425 square miles. The name Encom came later, derived from the term "entertainment communications." In December 1993, a further franchise was acquired, that of southeast Kent, which encompasses the Dover, Deal and Folkstone areas of Kent — the very areas expected to benefit from commercial expansion likely to result from the opening of the channel tunnel.

To date, Encom and its predecessor company have invested more than US\$375 million in the very latest future-proofed digital technology; fiber-optic bearers between switched and curbside cabinets; synchronous digital hierarchy (SDH) transmission systems; wholly digital switches capable of handling a multitude of value-added services along with sophisticated image and voice communications for virtual private networks. Fiber networks are being constructed to the latest controlled-environment curbside cabinets costing US\$2,000 each before linking up with copper conductors for the last furlong.

The money for this mammoth task has largely come from Encom's powerful backing trio of Bell Canada International (BCI), Jones Intercable and U.K. telephony operator Mercury Communications, a subsidiary of global giant Cable & Wireless.

In March 1994, these founding shareholders merged their U.K. cable investments to create a new company, Bell Cablemedia, but with each component company to keep its own individual identity. When successfully floated on NASDAQ in New York in July, it became the first U.K. cable company to do so. At launch, Encom shares were distributed between the three prior major investors: Bell Canada Enterprises 42.2%, Jones Cable 14.2% and Cable & Wireless 12.8%. The remainder were taken up by various institutions (21.1%) and miscellaneous investors (9.7%). Shares were trading at over US\$23 each in October, showing a healthy \$6 climb from launch.

The new merger, directly following a strategic alliance in the U.S. between Jones Intercable and BCI, which gave the latter a 30% stake in the former, brought together cable operations as far apart as South Hertfordshire, Yorkshire, East Anglia, Worcestershire and Wearside, adding to those of Greater London, Essex and Kent to form the third largest cable operation in the U.K. with 2.1 million equity homes. This empire, second only to Nynex and Telewest, is being served by three NT DMS 100

switches costing more than \$23 million, situated in Redbridge, Bexley and Watford, routing traffic to the networks of BT and Mercury, with whom Encom became the first operator to hold concurrent interconnect agreements, as well as those of other cable operators. By comparison, BT has five NT DMS 100 all-digital switches and Mercury has 11.

Together with fellow London cable operators United Artists, Videotron, The Cable Corp., Telewest, Nynex and Cable London, Encom is a founding member of the London Interconnect Consortium, a mutual cooperation group established to provide London-wide TV and telephony services based almost exclusively on member networks. Although technically just one more member, Encom is very much a leading light in this group, carrying out the secretarial and support tasks necessary to keep the show on the road. In due course, the group plans to offer its TV subscribers a range of advanced features such as pay-per-view and programming for racially and culturally different communities.

Opportunities also will be offered for local advertisers to target London's cable TV audience as a whole. On the telephony side, the group is constructing an alternative network that will eventually grow into the largest synchronous digital hierarchy network in the U.K. Some pleiochronous digital hierarchy systems will have to remain, however, to interconnect with BT's networks.

Channel One

For a long time it has been the ambition of London cable TV operators to own their own channel, Channel One. Following months of discussion and hard work, the London Interconnect Consortium awarded the franchise to Associated Newspapers, which publishes the London *Evening Standard*. Several large companies also submitted bids for the franchise including London's Carlton Television and NWT, but it was felt that Associated Newspapers was in the best position to do the project justice, especially as it already had a substantial newsroom staff.

Broadcast from the Channel Four building on Charlotte Street, the channel was launched in November 1994. Initial viewer reaction has been described as very good. Programming is based on a general entertainment mixture with a heavy news input. Extensive use is made of roving "video journalists" who race to the scene of an incident on motorbikes or foot, armed with a camcorder. Each journalist is responsible for his own production and presentation, which keeps down editorial costs enormously. The immediacy and spontaneity of the reporting has been well-received.

Centrex

To cater for companies seeking to expand or replace their communications capability, Encom launched a Centrex service in September 1994. The service was officially opened by Chief Executive John Sheridan and former government minister Kenneth Baker.

Centrex is unquestionably the business service with a future. A powerful network-based feature, offering all the

"EASTERN" Tuner, Decoder, and Converter

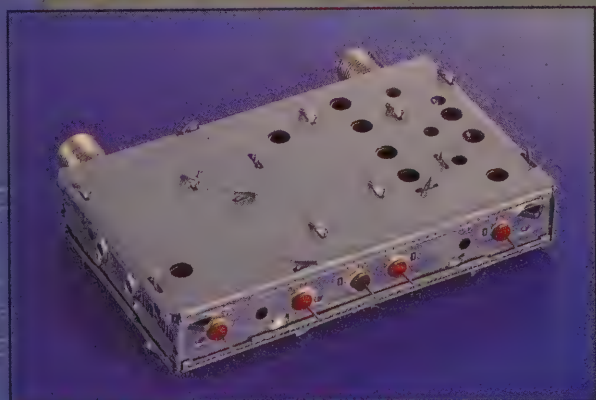
If Quality
could speak,
it would say
"EASTERN"



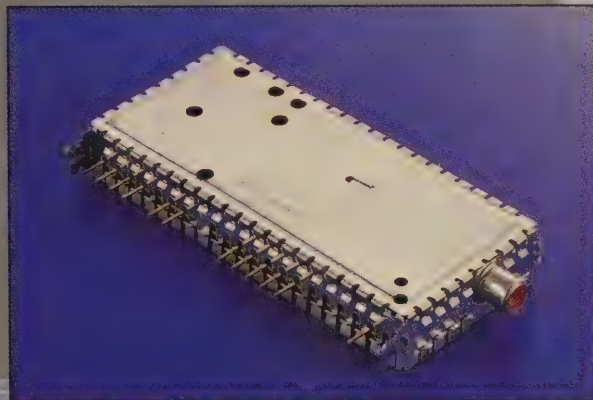
NTSC or PAL
CATV, UV or MMDS Plain Converter

CATV, UV or MMDS
Addressable/Descramble
Converter or Decoder

Our 20-year firm commitment and quality is behind EASTERN products and OEM/ODM service. Eastern can help you to migrate to Addressable/Scramble Pay TV system.



CATV Tuner (I/P: 47-660Mhz)



U/V Tuner (I/P: 47-860Mhz)

EASTERN ELECTRONIC CO., LTD.

No. 4, Shin Long Road, Kwei-Shan Industrial Area, Tao-Yuan, Taiwan
Tel: 886-3-361 1141~4 Fax: 886-3-362 5407

POLOTEC INC.

2372 Walsh Avenue, Santa Clara, CA 95051, U.S.A.
Tel: (408) 986 8417 Fax: (408) 986 8721



South wold Ent Co.Ltd
"PROFIT FROM OUR EXPERIENCE"

Leading Manufacturer & Exporter Of CATV-SMATV-MATV Products

- Splitters 550/860/1000/2050 Mhz
- Amplifiers 550/860/1000 Mhz
- High Gain Amplifiers
 - Up to 40 db Gain
- Taps 550/600/860/2050 Mhz
 - 1 way to 64 Ways
- Equalizers
- A/B Switch
- Hardware
- Apt Box
- Isolators
- Tools



OEM Orders Welcome

Please, fax or write us for a free catalogue!
12F, 146, Section 5, Min Sheng E. Road,
Taipei, Taiwan, R. O.C.
Tel: 886-2-767-6768
Fax: 886-2-765-8620

Reader Service Number 72

advantages of a sophisticated PBX without the inconvenience of having to buy one. All the switching facilities are provided on a rental basis by the main switch housed at the telephone company building. The degree of sophistication required can be modified to each customer's individual needs. And as the customer's hyperthetical PBX is an integral part of the telephone company switch, it is monitored and maintained by sophisticated computerized equipment 365 days a year.

Interactive TV

Last spring, Encom became one of the first cable operators to announce its intention of introducing interactive TV services. An agreement was reached with Group Vidéotron Limitée for the deployment of 200,000 Videoway units over a seven-year period. Delivery is expected to begin in early 1995.

Interactive TV promises a new kind of family entertainment for the home, providing a wide range of sports, information and education activities 24 hours a day over a multimedia distribution network fed by the much publicized and seldom understood information superhighway. Initial applications are likely to be based on home banking and armchair shopping, however. Although the technological potential cannot be questioned, it is debatable whether the underpaid and overtaxed British public will have sufficient disposable income or even interest to subscribe to the service. Selling it will present a real challenge to Encom and its sister operators.

Programming

Encom currently offers 45 TV channels in three packages: standard, which includes the Mind Extension University, a sort of low-key equivalent of the U.K.'s Open University; deluxe, which includes a NICAM stereo viewers' jukebox channel; and premium, which includes the movie and foreign language channels, including Arabic. Half the channels are broadcast in NICAM stereo sound and almost all the programs feature Encom's teletext service. Encom also relays 16 satellite FM radio stations.

The basic standard package costs \$15 per month, the deluxe \$20 per month, and the premium channel varies between nothing for the movie channels, \$12 for the Asian channel and \$6 for the foreign language channels. All cable TV subscribers qualify for a discount on their cable telephony line rentals.

Clientèle

Encom has a long list of impressive customers including international consultants Ogilvy & Mather and many of the British national daily newspapers. But apart from large numbers of its immediate neighbors in the prestigious Canary Wharf development area of London, major successes have been chalked up with London's outsized local councils and other public utilities forced by swinging government budgetary cuts to seek ways of economizing on expenditure.

The Royal London Hospital in Whitechapel, scene a century ago of the Jack the Ripper killings, is one of seven National Health Service hospitals to sign up for Encom's business telephone service. The "London," the first hospital to go live with Encom, has installed 30 lines for outgoing service only, leaving half of its BT lines for



FREQUENCY AGILE MODULATOR Model HMA-500



- Output Channels 2-70
- Front Panel LED channel display
- 40 or 60 db Output
- Microprocessor based PLL Tuning
- Low Cost: \$410

The HMA- 500 is a new upgrade of our popular HMA-450. The DIP switch channel selection has been replaced by a simple one button microprocessor system with a clear LED readout of your channel. The HMA-500 has also has the range extended to 500 MHz.

HOLLAND
ELECTRONICS CORP

4219 Transport Street
Ventura, California 93003 USA
(800) 628-4511 (805) 339-9060 FAX (805) 339-9064

Reader Service Number 74

incoming traffic and ceasing the remainder. This is recognized as the most economical way of configuring the lines and adds to system security. Whichever company loses all its cables, the other can carry the brunt of the hospital traffic by virtue of the diversity of line routing.

Another feature winning over these large hospitals and other public utilities is the fully itemized billing that allows them to keep track of individual accounts within their administrations, an essential feature as the U.K. heads blindly down the individual profit center route. Many also take advantage of Encom's DDI (direct dialing in) facility, which speeds up incoming call completion times. Some hospitals are being centralized onto one switch. In the Newnham Healthcare area, four separately located hospitals share the same switch.

In addition to planning program schedules that will appeal to the cultural makeup of the community within its franchise area, Encom has strengthened its rapport with the public with the creation of a community channel. Encom is also active in the sponsorship of local education, sports, arts and community events.

On the management board, technical and managerial expertise from the U.K., Canada and U.S. come together. Attracting management of the highest caliber is seen as essential to help Encom achieve CATV residential accounts of 250,000, residential telephony accounts of 160,000 and business telephony accounts of 25,000 lines before the end of 1998. The board has adopted five guiding principles for the company: Be market-driven and customer-focused; search for continuous improvement; be results-oriented; empower teams; and show concern for people.

Future

The present looks good and the future assuredly rosier. Over the past two years Encom has enjoyed a period of very rapid growth, both in terms of company expansion and market penetration. This is most clearly illustrated by the substantial increase in its work force from 45 staff members two years ago to 525 staff to date, including eight expatriates from Canada and the U.S. This represents an increase of five per week. The company head count will probably bottom out in 1995 at around 600. These figures are supplemented by a specialist contractor work force of another 600 people. In 1993 alone, Encom added 100,000 new homes and businesses to its network, which represents the quickest build rate from start-up by any U.K. cable operator. By the end of 1994, the number of homes passed is expected to exceed 250,000, approximately one-third the number of franchised homes, leaving enough room for the continued expansion.

Encom is working at developing a number of telecommunications and entertainment partnerships to broaden its portfolio of services. In the near-term, this translates into an exciting range of enhanced telecommunications capabilities and interactive visual services; in the longer term, early entry into full-blown multimedia. **IC**

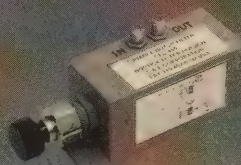
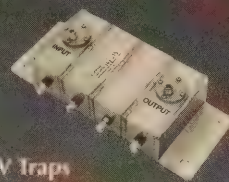
Stewart Wittering, formerly of BT, is a freelance consultant and journalist living in Leicester, England. An honors graduate of the University of London, he is a member of the Institute of Linguists, and a registered incorporated engineer. Having lived in Venezuela and France, Wittering speaks fluent Spanish and French.

RF & MICROWAVE FILTERS FOR TV NETWORKS

CATV

FILTERS FOR
ALL SYSTEM NEEDS

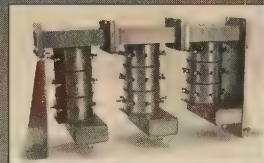
- Channel Deletion
- VHF/UHF Bandpass
- Off-Air Noise
- Pay TV Traps
- Co-Channel
- Scramblers



TVRO

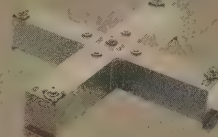
TI SOLUTIONS-
EVEN FOR
WIDEBAND TI!

MMDS (Wireless Microwave TV) RELAY ANTENNAS



Channel Combiners

LPTV



Combine Up To 16
UHF Channels



Emily Bostick
President

Want a Catalog? Have a Problem?
Call or FAX Me Today!



7395 Taft Park Drive
East Syracuse, N.Y. 13057
TEL: (315) 452-0709
FAX: (315) 452-0732
Canada & U.S.
800-882-1587

Reader Service Number 75

New ideas for pay TV in Spain and Portugal

By Robert L. Smith

In what is arguably one of the best conference locations in the world, Iberica Link '94 debuted in Madrid, Spain, September 26. A two-day, tabletop event, Iberica Link '94 drew over 600 attendees who heard talks by leading industry experts, viewed the latest equipment and spoke with vendors from all corners of the telecommunications and pay TV industries.

Attendees were treated to executive conferences covering programming, financial planning, delivery systems, wireless cable, business operations and two special conferences detailing the information highway and interactive applications. Many delegates attended the special technical workshops, "Cable TV Systems Design and Construction" and "Design Considerations for Fiber-Optic and Interactive Broad-band Networks." Technology briefings on digital television, fiber-optic transmission and video servers were also held.

The conference was attended by a wide cross-section of industry executives including cable TV suppliers and operators, MMDS suppliers and operators, programmers and satellite delivery organizations. The event preceded the World Economic Conference and the World Bank annual meeting, with many interested parties from those events making an appearance.

"We're obviously thrilled about the response to the first Iberica Link conference," said Carl Berndtson, managing director of Global Expositions Holdings (Globex), of Houston, Texas, U.S.A., the event producer. "Judging by comments from delegates, speakers and exhibitors, this event has already become the annual summit for pay TV interests in Iberia. Next year will only be bigger and better."

Based on input from Globex's advisors and clients, Iberica Link '95 has been scheduled for June 7-8, 1995, in Madrid. In future years it will continue to be held in June, although

Spain pay television profile



Current TV households: 12,000,000
Cable subscribers: 700,000
DTH subscribers: 115,000
Canal Plus subscribers: 850,000

Source: InterScope Communications



it may move to other cities in Iberia that can accommodate the anticipated growth in exhibit space.

Similar in format to its sister shows in Mexico and Brazil, Iberica Link is designed to address issues relating to pay TV and telecommunications with special forums on the information highway and wireless cable.

U.S. companies were well represented, with ANTEC, Comex, Discovery Channel, First Pacific Networks, General Instrument, Lance Industries, Products Production Company, Times Fiber Communications, Turner Broadcasting International, TVC and Vista Vision demonstrating their products to the eager audience.

Also exhibiting were many Spanish companies including Cable de Comunicaciones, Conducif, Ikusi, Intelsis, PMC, Silicon Graphics and TPS. Other international exhibitors included Cable Data International from England, Sirti from Italy and South Wold from Taiwan.

For a first-time event, the show attendees were very excited and spent a great deal of time with the exhibitors. Joe Barris, vice president of Lance Industries, said, "Although small, the quality of the customers we talked to was probably the best I have ever had at any show during my lifetime."

Interest in wireless

There was considerable interest in wireless cable at the conference. A wireless cable forum was held by the Wireless Cable Association International (WCAI) on September 27. The panelists included WCAI President Robert Schmidt, Barris, and Jeff Mathias, director of business development for American Telecasting. The forum was attended by over 100 people eager to learn about wireless cable and the impact it may have in the developing Spanish pay TV market.

"I am confident that the country will go wireless or at least will have wireless as an option as a result of the show," said Barris. "It seemed, although, that they have never been aware of the immediate impact wireless transmission could have had in a given marketplace. They appeared to be leaving the show with a renewed enthusiasm to pursue the assignment of MMDS frequencies from their communications commission. Many customers thanked us, and when I say 'us,' I mean all wireless participants at the show."

U.S. operators were on hand and met the same enthusiasm. Mathias said, "I was very pleased to see the high level of interest and excitement in MMDS in Spain. There was a diverse group of attendees — poten-

Jornadas de Actualización en Televisión '95

JATV '95

Conferencia y Exposición

Empresas que ya han confirmado su participación

Rubro Programación:

Doblevisión S.A. - HBO Ole/Cinemax-
Turner International -TNT/CNNI/ Cartoon Network-
Sur Televisión
Televisión Argentina S.A. - TVA-
Megavisión S.A. - Siempre Mujer-
Televisión Satelital ABC - Canal 9/Cable Clásico-

Rubro Técnico:

Megavisión S.R.L.
S.V.C. S.A.
Ser-Sat

Rubro Servicios:

Magazine Satelital S.R.L.
Publisat S.R.L.

30 y 31 de Marzo - Hotel Hermitage, Mar del Plata-

Organiza Asociación Bonaerense de TV Cable
Realización Integral Visión Producciones

Informes: Lavalle 1125,1º Piso, Of. 3 - (1048) Buenos Aires
Tel (54-1) 382-9232/4474/2319 Fax: (54-1) 382-9124



The main exhibit area of Iberica Link '94, which attracted over 600 attendees and a wide cross-section of industry executives.

tial operators, programmers, financial investors and competitive delivery operators. The pay TV industry in Spain, while embryonic, holds great promise."

Frank Trainor, president of Vista Vision, a manufacturer of computer-controlled MMDS transmitters, was equally impressed by the turnout. "The Iberica Link show far surpassed our expectations. The quality of the prospects made the show very worthwhile for Vista Vision; we definitely plan to attend next year. We feel a significant amount of wireless technology, including wireless cable, will be constructed in the Iberia region over the next few years."

Driving the highway

There were two executive conferences held on the information highway and interactive technology. The first panel was moderated by Lucie Fjeldstad, president of Fjeldstad International, a leading company in the development of telecommunications infrastructure to support the information highway. The panel included some of the most prolific speakers to ever be assembled on one panel. John Gage, the co-founder of Sun Microsystems computer company, and arguably the most knowledgeable person on the Internet, gave a blazing description of the Internet software Mosaic and generally blasted the telephone companies because of their high rates and tariffs.

Other panelists described various uses for the information highway and how their companies are preparing for the future through technology being installed today.

A special panel on interactive applications described how interactivity is changing the way we conduct business, the benefits to our educational system, and the overall effect new technology will have on our lives.

A new launch

The Discovery Channel utilized the forum to formally launch its service in the Spain marketplace. They hosted a grand gala reception at the Melia Castilla that was attended by dignitaries from the U.S. Embassy, noted local officials, media and conference attendees. Discovery Channel management is clearly excited about the new launch and has high expectations from the marketplace in Spain and Portugal.

Concerning the issue of availability of the Discovery Channel, Dawn McCall, vice president, general manager - Latin America, said, "We've had a lot of requests for our programming there, so we really worked overtime and double-time to try and get the signal over there.

"At this point, TPS (Discovery's distributor in Spain and Portugal) has a license for SMATV, cable and MMDS that they will be distributing for us. The only thing that we haven't made a decision on at this point is

the DTH [direct-to-home] market. Our plan for the fourth quarter of this year and the first quarter of next year is to figure out where that market is and what the needs of that market are. But other than DTH, TPS will be distributing to all the other distribution means."

When asked if the recent decision not to enact the long-awaited pay TV legislation would impact the Discovery Channel plans, McCall responded: "I don't think so because at least my understanding of what's happening is that companies are moving ahead and putting money into developing the systems. I don't think it's a question of whether or not there will be cable in Spain, I think it's just a question of how the laws will regulate it. From a programmer's perspective, we feel very good about what's happening."

An issue among programmers looking to expand in the Spanish market is copyright and availability of programming. It's difficult to secure full-time programming with some rights being controlled by European Union policy. Is this a problem for Discovery?

"There really isn't with us," says McCall. "There is about a 10-15% swing on the programming that we have between our Latin service and what we will be showing in Spain and Portugal, and that certainly has to do with rights — that we weren't able to get certain exclusive rights to programs. We don't really anticipate that it will be a big problem for us because we produce so much of our own product."

Spain

Is Spain ready for pay TV? Based on the latest economic outlook and activity within the industry one would say yes. According to "IMF/World Bank 50th Anniversary Report," September 1994, the Spanish economy, after a protracted recession, finally appears to be on the road to recovery. Exports stand at an impres-

"The Spanish economy, after a protracted recession, finally appears to be on the road to recovery."

"Canal Plus will remain a force and a serious obstacle to the development of the industry throughout Spain."

sive 19% year-on-year against a 5% rise in imports. Even in the face of weak domestic demand, the surge in exports is expected to contribute towards GDP growth of 1.2% in 1994, increasing to 2.3% in 1995 as domestic demand begins to recover.

Even without legislation officially sanctioning pay TV operations, the industry has forged ahead with SMATV operators building a significant industry.

There are an estimated 799,000 subscribers throughout the country being served by SMATV systems. There also are an estimated 150,000 DTH subscribers receiving pay TV services via satellite.

Clearly the dominant pay TV provider in Spain is the official monopoly Canal Plus, now boasting over 800,000 subscribers to its single-channel, over-the-air service. Not timid in its use of its monopolistic position, Canal Plus controls both programming and distribution of key programming.

Howard France, managing director of the newly formed programming company, CIA. de Programacion Para Cable, S.A. (CPC), a joint venture between United International Holdings and Mitel, feels that Canal Plus, because of its legal monopoly status has no incentive to assist in the development of broadband distribution networks. France said: "Programming drives the distribution — you can't have one without the other — but you need the programming and there are still some real fundamental programming gaps in Spain. The big problem ... is that there is an over-the-air terrestrial monopoly in Canal Plus. They have a licensed monopoly for an over-the-air terrestrial channel that's encoded and decoded. They have coverage for most of the country and as a consequence they, with other legal restrictions on programming windows, can buy the best movies and the best sports events, specifically *futbol*, first-



John Gage (left), co-founder of Sun Microsystems computer company, speaks with the author about Mosaic Internet software.

class Hollywood movies and bullfighting. It's impossible, really, for any cable operator to compete against them."

France added: "They have roughly 850,000 subscribers. They charge very, very much by our standards. For one channel, it's 3,500 pesetas, which is about US\$25 for that channel. What drives cable in most areas of the world is good movies and sports. When you've got a situation where there is a monopoly in the market, over-the-air, that cuts you out of that, you have to be more creative. The only thing you can say in this market is that Canal Plus, if anything like the French model, will top out at about 10% or so of the market."

This is certain to change with the advent of properly sanctioned pay TV systems operating under the protection of legislation, but Canal Plus will remain a force and a serious obstacle to the development of the industry throughout Spain.

Pay TV legislation

The long awaited cable legislation was put on the back burner once again. The legislation continually undergoes modification before it is actually passed, which results in nothing actually getting accomplished.

The latest modifications will include the addition of legislative elements affecting the entire telecommunications industry. Many attendees of the conference were disappointed but

not surprised at this latest roadblock in establishing a sanctioned pay TV industry in Spain. The latest projections would indicate that passage of the legislation will now occur in mid-1995 at the earliest.

The delay has thrown a twist into the plans of foreign operators ready to invest in the developing cable TV infrastructure. The issue of foreign ownership is one of the major points of the new legislation but it appears that the 30% cap on foreign investment will not be changed as a result of the new delay.

Some foreign firms are proceeding without the legislation. United International Holdings (UIH) is investing in a state-of-the-art fiber based system to be constructed in Santander. The system will pass 50,000 homes and UIH will own 25% of the system. Isn't it a risk to proceed without formal legislation being passed?

Michael Fries, senior vice president of development thinks not: "We don't feel it's taking a chance for a couple of reasons. Number one — cable has been deemed to be a constitutionally protected activity, which doesn't mean there is a cable law but it means that the supreme court ruled quite clearly that cable systems and the services they transmit are protected under the constitution. So from one perspective, we feel we are somewhat protected.

"The other issue giving us some comfort is that our partners consist of some very strong local groups includ-



"Companies are moving ahead and putting money into developing the systems," said Dawn McCall of the Discovery Channel. "From a programmer's perspective, we feel very good about what's happening."

ing the city itself, the local bank, the local newspaper, the local power company and we're pretty confident that the consortium we have together will form a strong bidding group in the event licenses are issued later."

According to Fries, UIH is planning other activity in Spain and is currently looking at four or five other markets of comparable size with similar consortiums. UIH is not pursuing MMDS in Spain and feels that it will be complicated to get the frequency allocations, so they are focusing on cable TV.

On UIH's growth strategy, Fries commented: "The Iberian Peninsula for us forms a major part of our growth strategy in Europe. We are already in eight markets. With Phillips, when that merger is complete, we will be in another five markets and the two markets that we really have not exploited as a group or individually are Portugal and Spain. In Portugal, we have a joint venture and we have already filed for a million homes with the government."

On the Spanish domestic front, it is business as usual, with operators of small cable TV systems continuing to operate and expand.

The passing of the legislation will certainly result in a flood of cable activity throughout Spain. Scientific-Atlanta's new top executive in Spain, Gary Brust, when questioned about the potential in Spain and Portugal responded, "Since there is not yet a well defined law governing cable in Spain, the opportunity will be limited to speculation in some of the medi-

"It is clear that quality cable service will be available to everyone in Portugal in the next few years."

um-sized cities for now. After a law is passed, we hope that many large operators will invest in this strong potential market."

Brust further stated, "In Portugal, where there is CATV regulation already, some construction is underway and we expect to see much more activity in 1995."

As the market develops, there will be an increased need for suppliers to react more quickly to meet market demands. Scientific-Atlanta is well positioned to meet the increased demand according to Brust. "We have a strong presence in Europe through our U.K.-based operation and a sales team dedicated to continental Europe. As the business expands, we are prepared to add resources to meet the demands of the market," he said.

Of the potential for MMDS in Spain, he said, "MMDS is a good way to distribute pay TV signals over a large area rapidly. However, there are some limitations such as line-of-sight that must be considered before pronouncing an area technically feasible for MMDS. There are areas in Spain where MMDS could work if the government permits."

Portugal

The pay industry in Portugal is forging ahead with TV Cabo Portugal leading the way. TV Cabo is a wholly owned subsidiary of Portugal Telcom, the state-run telecommunications monopoly. There are plans to privatize a portion of the operation in 1994, with additional privatization scheduled for 1995.

Following the lead of the U.S. telcos, TV Cabo is installing one of the world's most modern and sophisticated cable plants with fiber being used extensively to feed smaller cells of low amplifier cascades. This improves signal quality and prepares the system for interactivity as it becomes available.

TV Cabo Portugal is headed by Jose Manual da Graca Bau, presi-

dent and CEO. In October 1993, they decided to construct a modern cable TV network. He feels that cable has a bright future in Portugal. "We already have lots of channels we can make available to people, and in the future we'll have lots of services that we think the cable TV networks will offer."

With legislation in place, cable TV is not restricted in its growth as in neighboring Spain. Graca Bau feels that the legislation is not clear when it comes to additional services such as interactivity, but as it evolves, this will become one of the most important benefits from cable.

In the interim, they are constructing new plant at a fast pace. Graca Bau said they are presently developing the basic service and intend to develop premium service at the beginning of next year. The network is currently being installed, with 30,000 homes passed, not only in cities but all over seven municipalities.

"We are working day and night in the development of the network," he said. "By December we will have in Portugal more than 80,000 homes passed, and next year we think we can have more than 250,000 homes passed."

Commercial service was to be initiated in October and Graca Bau says, "We are optimistic because we are having some commercial campaigns and the people seem to be prepared to have cable TV."

TV Cabo Portugal is structured with a holding company for all of Portugal. Numerous operating and regional companies throughout the country are 100% owned by the holding company. These companies are in the field, installing and selling.

All these companies are 100% owned by TV Cabo Portugal, which is 100% owned by Telcom Portugal, but this is changing. From October to December of this year, Graca Bau says: "We will sell 50% of the operating company to the private sector and next year we will sell 50% of the holding company. We have lots of investors that are interested in the business in Portugal and we have information on capital sources that are interested in investing in our project."

All TV Cabo's programming comes from satellites. It currently offers 30 channels, including

Discovery, Travel, CNN, TNT/ Cartoon Network, Sky News and Europe Sports. It also receives programming from Miami and has a deal with TPS that includes Tele Uno and other channels that TPS distributes in Spain.

Sophisticated system

One of the more surprising facts about TV Cabo is the cable system's high level of sophistication. It uses a fiber-optic distribution network to maintain a high degree of quality and allow for future growth. TV Cabo feeds cells of 2,000 homes with fiber and then feeds a very small coaxial distribution network of no more than four amplifiers.

"We are trying to be prepared for interactive TV and we are following the philosophy of the modernization of the American networks," said Graca Bau. "We have designed the network for 40 analog channels, but with digitization we have 750 MHz available."

Many international operators are beginning to add subtitles or second audio channels to increase market

"(In Portugal) TV Cabo is installing one of the world's most modern and sophisticated cable plants with fiber being used extensively to feed smaller cells of low amplifier cascades."

share. Graca Bau is considering this option. Some channels they receive provide the subtitles. For example, Discovery already has around 35% of its programming subtitled in Portuguese, and Graca Bau hopes it will increase to 80% in the next year. "That is the tendency of the different channels," he said. "As the market develops, the subtitles will come." TV Cabo is contacting programmers that plan to have subtitles in Portuguese in the near future.

When asked if TV Cabo would use its extensive network to

increase the amount of educational programming, Graca Bau responded, "I think so. I think it's very important, but it is not organized in Portugal. I am in Spain talking to someone in the educational department so we can transmit first in Spanish and afterwards perhaps in Portuguese."

The goal of TV Cabo is to have cable plant passing 1.5 million homes installed by the year 2000. Graca Bau feels that is the maximum number of homes that can be passed with the existing technology. To reach more homes would require the use of a different technology such as MMDS. He does not feel that MMDS will be a competitor, but rather a complimentary service to cable.

Either way, it is clear that quality cable service will be available to everyone in Portugal in the next few years. **IC**

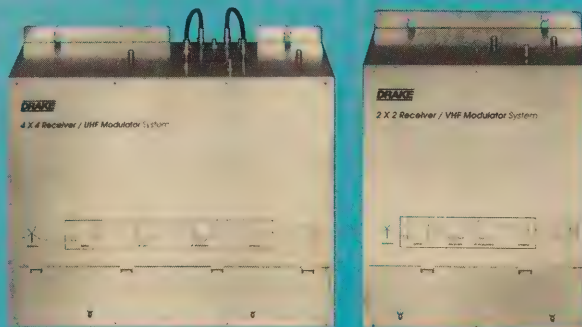
Robert L. Smith is president of InterScope Communications, a company involved in the international development of pay television.

Less Effort. More Profit.

Choose From Four Complete, Self-Contained SMATV Systems.

In response to installers' demands for a rapid-installation, low-maintenance SMATV system, Drake is proud to introduce our new series of self-contained, remote-controlled systems, available in two- or four-channel VHF or UHF frequencies.

- Two- or Four-Channel Reception and Signal Distribution
- Available with VHF and UHF Output Frequencies
- Operates in PAL Format
- Remote-Control Programming
- Rapid, Versatile Installation
- Reduced Tampering
- Low Maintenance



Find out more about Drake's leading-edge technology.

DRAKE

R.L. Drake Company

P.O. Box 3006 Miamisburg, Ohio 45343 U.S.A. phone (1) 513-866-2421

Dr. Trueta 1 y 3 08860 Castelldefels (Barcelona) Spain phone (34) 3-636-0192

655 The Queensway #16 Peterborough, Ontario K9J 7M1 Canada phone (1) 705-742-3122

Reader Service Number 76

International telephony: Cable style

By George Lawton

No matter how you slice it, telephony is a bigger revenue generator than cable TV all around the globe. In the U.S., one of the world's most active markets for telecom services, the telephone companies take in revenues more than 10 times that of the cable industry. In other countries cable operators are looking at how to move into telephone services for added profit. In most cases these efforts are in cooperation with the local post, telephone and telegraph (PTT) operators. However, elsewhere, most notably England, cable operators are finding it easy to snatch customers away from overpriced services.

The cooperative model

Telephone Technology International (TTI), based in Atlanta, Georgia, U.S.A., exemplifies the cooperative model. They have been working with international finance organizations such as the World Bank to bring multichannel multipoint distribution service (MMDS) and telephony systems to areas the local phone company has been unable to serve.

TTI maintains a call center in Atlanta, which has satellite linkages to 52 MMDS/telephony systems in 22 countries around the world. Each system supports up to eight MMDS channels and 10,000 telephone lines. The telephone network is based on hardwired cellular links so TTI does not have to get involved in pulling telephone lines to each building it services.

Ray Hamblett, president of TTI, said: "Our group got its start privately during Desert Storm (The U.S.-Iraqi war) when we got a contract to do services in Saudi for the U.N. which allowed them to call the world. Then we started to look around at other developing countries."

In Romania, TTI has developed a network for privatized hotels along the Black Sea coast that includes MMDS and telephony. In Hungary,

TTI is working on a more ambitious project to install 52 new switching stations throughout the country. Ericsson and Siemens are helping to establish a US\$100 million bank loan for the project. But, Hamblett said, "That still leaves 40 cities not included in the plan."

Hamblett said the system costs about US\$1,400 per line for telephony in a 10,000 line system. A complete system for doing eight channels of MMDS and telephony costs about US\$15 million of capital investment. He pointed out that this niche market makes sense in about 60 developing countries around the globe, but TTI is only focused in about 22 because of the good funding programs from U.S. and European organizations. "There are very good sources of government and private money used to leverage and support infrastructure and redevelopment in those countries," Hamblett explained. "Leveraging that with private money, the city itself only produces 15% of the project value and we do packaging through various ways of the other 85% of the value."

"If you look around the world, whether Argentina, Chile or Central Europe, all the phone companies are privatizing to allow private telephone service. All already support private MMDS and all are allowing private broadcast. There are 60 countries with that profile."

Often, TTI's customers are small city authorities that cannot wait for the local PTT to bring in communications. TTI can use microwave links to connect a customer to the local PTT's network. Alternatively, TTI can bring the communications via satellite through Atlanta. Hamblett pointed out that in many cases, this enables telephone customers to make calls much cheaper than they would through the local telephone company, even when calling nearby cities. This is due in large part to the exorbitant rates that PTTs often charge for long distance services.

International call-back

In fact, these exorbitant rates have given rise to a new type of phone ser-

vice called international call-back in which international telephone callers can connect around the world at U.S. rates, which are often one-half to one-third that of other countries. In this scheme, an international caller dials a switch in the U.S. then hangs up. The U.S. switch calls him back at a predesignated number with an international dialtone. Although the service has been legitimized by the U.S. Federal Communications Commission, call-back companies operate under the potential wrath of PTTs that frown on such activities.

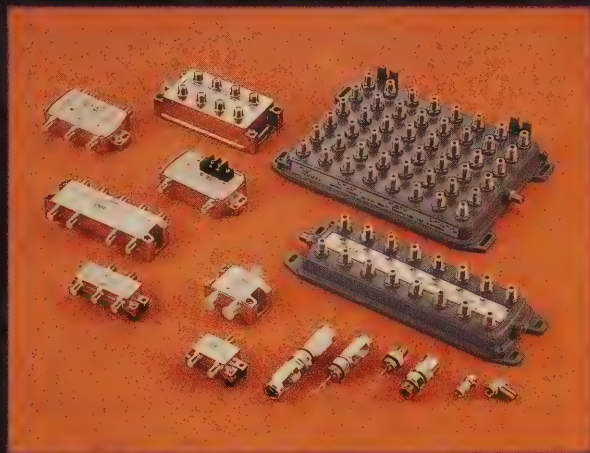
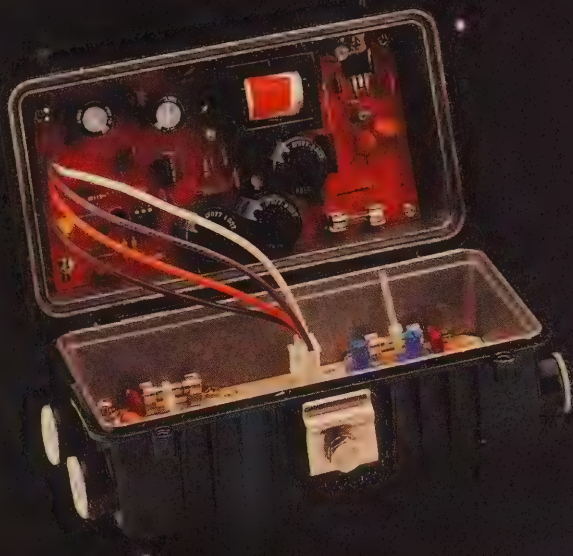
Telephony may seem beyond the financial means of many countries whose residents take home relatively small salaries. But according to Rob Avery, product manager for telephony systems with Scientific-Atlanta, that is not always the case: "People are realizing that if a telephone service is available it will be sold, regardless of GNP (gross national product) or however you rate the economy. They seem to find money for telephone service; the same for CATV — there is a lot of TV in places you think of as economically depressed."

Avery cites the case of China, in which the average person makes under US\$100 per month. "If you look at something like China, they are capitalists that have been repressed. If you provide telephone service, we will sell it. Look at Motorola; they cannot keep enough cellular phones in the country. There is an incredible demand for communications."

In fact, the Chinese government is encouraging businesses to build networks for both cable TV and telephone. The current five-year plan calls for doubling the number of telephone lines.

However, one telecommunications consultant who asked not to be identified said that Chinese entrepreneurs are often taking a narrow-minded view in building new networks in order to keep costs down. A lot of the systems going in only support 300 MHz, which is not enough to support telephony in addition to cable. He said: "They have to face facts and build the right network from the start."

SMATV/CATV EQUIPMENT



Established in 1975, We've specialized in developing and manufacturing profit-intensive SMATV, CATV and audio/video equipment. Our dedication to quality is backed by 500 experienced employees in Taiwan, 1500 skilled employees in China, an up-to-date automatic production line and precision QC equipment. We design high performance products that meet the demands of the U.S. and European markets. Why not send for detailed catalogs today?

EXCLUSIVE OEM COOPERATION WELCOME

Reader Service Number 45

Manufacturer & Exporter

JEBSEE ELECTRONICS CO., LTD.

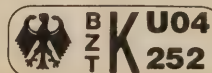
P.O. BOX 57, Tainan, Taiwan

Tel: 886-6-264-7622 Fax: 886-6-263-8446



SAA FCC DOC

ISO 9002



Tainan, Taiwan 100,000 Square Feet



Shenzhen, China 600,000 Square Feet

Their homemade equipment does not have the capability of upgrading to two-way plant. In the western world they are approaching things correctly and looking at the big picture instead of saying, 'We have three channels of video, so let's put a three-channel system in.'"

Head to head with local telcos

In many countries, the regulatory environment is relaxing enough to let competitors to the local phone company come in and set up shop. The biggest hotbed is currently the United Kingdom, where cable companies are discovering just how much pent-up demand there really is.

The most notable venture is Telewest, a joint venture between US West and Tele-Communications Inc. They are realizing a take rate of telephony services of about 30%. According to Avery, "The cable operators are fairly small compared to BT, but are getting enough customers within their grasp that attention is turning to telephone more than video."

Avery believes we will see a bigger deployment of telephone over cable systems outside of the U.S. first because of both regulatory issues and the large pent-up demand. "There is a demand in the U.S., but there is a certain satisfaction in the U.S. However, you do have a substantial amount wanting to change.

"MCI has demonstrated that by building their business from nothing 10 years ago to 30% of the long distance market today. MCI did it in 10 years. Mercury did it for long distance in the U.K. in five years and the cable companies could do it in three years. How fast they can get there will be tied to what they are allowed to do and what kind of incentives they have."

Avery points out that if you study the cost model to build a network from the ground up, it will take six to eight years to get a payback with video alone. However, as soon as you add telephony capabilities, including buying the switch, the payback drops to three years. "You can see there is a tremendous incentive to provide telephony systems."

This first generation of networks does not even take advantage of the coaxial cable to carry the video. The closest they come to sharing infra-

"In many countries, the regulatory environment is relaxing enough to let competitors to the local phone company come in and set up shop. The biggest hotbed is currently the United Kingdom."

structure is that they both run through the same trenches. A separate twisted copper wire is pulled from each local node to the subscriber's home for telephony, independent of the coax.

Equipment for telephony over coax

A new generation of products could reduce capital investment for these networks even further by enabling them to share the same coaxial link. Scientific Atlanta is developing the CoAxiom product line, which will provide the RF portion needed for doing telephony over a cable network.

General Instrument is working with DSC Communications and its Lightspan digital cross-connect system, developing a module that plugs into Lightspan, as well as the coax amplifiers and set-top boxes. They are planning trials by early 1995 and full deployment of the system by the end of 1995.

First Pacific Networks has developed a fiber/coax/twisted pair network for voice, video and power networks. Its latest version supports telephony over coax and is being tested in England.

Raynet is developing a hybrid fiber/coax architecture for the local loop, which it is planning to have available this fall. The architecture is based on many of Raynet's existing products, including its LOC-2 hardware and RIDES operations support system software. Raynet plans to provide the components for both fiber-to-the-curb, and fiber/coax hybrid networks. It will enable telephone companies to deploy either architecture with the same build-blocks.

Com21 Inc. is working on a broadband network architecture that will deliver voice, video and data to the home over an ATM-based hybrid

fiber/coax network. The system is currently in the development stage.

Rural access

For just broadcast video in rural areas, MMDS is probably the best solution for a video provider. However, when they want to offer telephony, or move into more advanced interactive services, a wide area fiber-optic network is probably the best alternative. There are at least two companies addressing this niche market.

A new startup company called E/O Networks is developing fiber distribution for low density applications that supports both voice and video, and eventually data. The voice part of the system supports low data rate and uses a counter rotating ring topology similar to SONET, which enables it to continue operations even if the cable is cut. However, it only operates at 40 Mb/s, which drastically reduces the cost of the add/drop multiplexers at each optical node. Leif Hoglund, vice president of marketing at E/O Networks, said, "Conventional networks for wide area applications provide a Mack truck when all they really need is a pickup truck."

The telephony portion of the network is carried over two separate fibers, each transmitting in opposite directions. The AM video is carried over a separate fiber and part of the optical signal is tapped off at each local node where it can be modulated onto coax. The system is designed to handle from six to 100 lines per home. It is scheduled for a cold weather test in January, and will be ready for the commercial market in March 1995.

American Fibre Communications also has developed a network designed to minimize costs in rural areas. The current system is optimized for telephony with relatively few subscribers per node. However, AFC is working with Tellabs to develop a product for doing telephony over coaxial networks. **IC**

George Lawton is a freelance journalist/adventurer currently based in Brisbane, California, U.S.A. In 1990 he received a degree in marine systems management from the Institute of Echotechnics after completing an expedition to circumnavigate South America (with a brief stop in Antarctica). He has written articles for Communications Technology, Telephony, Mac Week, AI Expert, Imaging News and Electronics.

Quality Satellite Receivers Your Customers Will Trust



BENJAMIN ELECTRONICS CO., LTD.

3F, No. 8, Lane 130, Min-Shuan Rd., Shin-Tien, Taipei, Taiwan
Tel: 886-2-218-1250 Fax: 886-2-218-6484

Reader Service Number 21

Is DirecTv about to enter the Canadian market?

By James Careless

After being blocked for years, DirecTv may be on the verge of legally entering the Canadian market. That's because the last apparent hurdle in its way — a ruling by the Canadian Radio-Television and Telecommunications Commission (CRTC) that would require it to channel all its signals through Canadian satellite facilities — may be about to fall.

DirecTv's interest in this market comes as no surprise. After all, given the company's satellite signal spillover into Canada, and the country's 500,000 dish owners who have a long history of buying U.S. services through the illegal grey market, it only makes sense that DirecTv would want to sell subscriptions here.

However, the company's ambitions have long been blocked by the CRTC at the urging of the domestic cable TV industry, whose owners fear the impact of an unregulated U.S. competitor on their regulated monopoly marketplace — one where each company currently controls exclusive chunks of territory at the government's pleasure, like feudal barons in a medieval kingdom.

To date, the Commission's most effective weapon has been blackmail. It has warned authorized U.S. services like CNN and TNN (currently seen in 91% of Canada's 7 million-plus cable households) that they will be booted out of the country posthaste should their signals be sold in this country by DirecTv without the CRTC's approval.

Protecting Canadian culture

Ironically, the CRTC's actual target in this case is the vast number of unauthorized U.S. channels — that is, unauthorized by it for distribution in Canada — that an unencumbered DirecTv feed would make available to Canadians. Since they're not available here anyway, it has no leverage with them; that's why the Commission is controlling the situation by pressuring those authorized U.S. services that have something to lose by defying it.

The result? As of yet, DirecTv hasn't made any significant impact on the Canadian market. In fact, it hasn't tried. But this doesn't mean the company has been sitting on its hands.

Instead, it has taken a different tack. Rather than try to take on the CRTC head-on, DirecTv has formed a Canadian subsidiary, Power DirecTv, with the majority shareholder being Canada's Power Broadcasting. (In order to qualify Power DirecTv as a Canadian company, Power holds 80% of its stock, DirecTv holds 20%.)

Having done so, it also has found a way to work around the issue of Canadian content, perhaps the thorniest issue for any foreign service.

In the past, cable's strongest argument against DirecTv was its overwhelmingly American content. Allow it into the country, the industry has said, and Canada's fragile culture will be overwhelmed once and for all.

Since the heart and soul of the CRTC's broadcasting mandate is to protect and foster this culture, it's not surprising that the Commission has agreed with cable, and wherever reasonably possible, done its best to bolster the industry's protected status.

However, thanks to the wonders of addressable set-top technology, Power DirecTv Chairman Joel Bell says the company will be able to "only distribute what is authorized for distribution in Canada. We would comply with the Canadian Broadcasting Act."

Specifically, what Power DirecTv intends to do is to program its set-top receivers to allow only those U.S. signals already approved for distribution here.

Says Bell, "We'd be taking off the DirecTv satellite for the U.S. signals, and off Anik (Canada's two domestic satellites) for the Canadian."

These will then be combined at the set-top box, providing Canadian TV viewers with a direct-to-home (DTH, Canada's manner of describing direct broadcast satellites) service that fits entirely within CRTC regulations, but that also offers them 80-100 channels

of on-demand pay-per-view programming, a quantity that cable currently can't match.

New DTH criteria

So what's stopping DirecTv? An August 30, 1994, ruling by the CRTC defining exemption criteria for domestic DTH services: that is, which hoops these companies have to jump through if they want to go on-line now, rather than go through an expensive, time-consuming and potentially fruitless licensing process.

To date, the DTH consortium put together by Canada's cable and telephone industries meets all eight of the specifications laid down by the Commission, meaning that they can essentially go on-air as soon as is technically possible.

However, Power DirecTv isn't so lucky. Although apparently clearing the CRTC's regulations for Canadian content, the company still runs afoul of one condition described in the Commission's August 30 news release: that any exempt DTH distributor must use "Canadian satellite facilities to distribute all of its programming services, except during emergencies" (such as last January's wholesale failure of Anik E2, which temporarily wiped most of Canadian cable and broadcasting off the face of the earth).

The reason for this requirement is "to keep traffic in Canada, on the Canadian satellites," says CRTC Public Affairs Director Bill Allen. "It's to make use of the Canadian system, so that the money is flowing to a Canadian company."

Although Allen says that this criteria isn't specifically aimed at blocking DirecTv, its very existence still affects the company "pretty fundamentally," says Bell. "It says you can't carry on business in this country if you don't take all of your signals from a Canadian satellite, even though that discriminates against direct-to-home because cable does take U.S. signals from U.S. satellites," and, in fact, has done so for years.

Despite Allen's explanation, it's

still not clear why the Commission has set this rule, one that, at best, makes doing business in Canada very difficult for DirecTV. To do so, Power DirecTV would have to downlink all its services from DirecTV's U.S. bird, then send them back up on Anik, where they would then be downlinked by subscribers, a technically unnecessary step that "would simply cost the consumer more," says Bell.

Now if this were where things stood, then one might conclude that DirecTV was right back where it started in Canada: stopped at the doorstep, again.

Public review

This may not be the case at all. That's because just two weeks after the CRTC's exemption criteria were released, the two federal departments to which the Commission reports jointly announced a complete public review of Canada's DTH policies.

In a news release dated September 12, 1994, the Ministers of Canadian Heritage (broadcasting) and Industry (telecommunications) gave Power DirecTV some hope when they stated, "The recent exemption order issued by the CRTC reflects existing policy which will be examined by means of full and open consultation with all interested parties."

Officially, the government is saying that concern over the development of the information highway, and not DTH, motivated the review.

Still, the CRTC's exemption decision was a catalyst, admits Mike Helm, director general of telecommunications policy at Industry Canada. Says Helm, "The government thought, 'Well, it's timely to have our review to make sure that we're getting the longer term picture right.'"

And what's on the table? According to the September 12 news release, "Analysis of the consequences of requiring the exclusive use of Canadian satellites for services made available in Canada," among other things — consequences that currently are keeping Power DirecTV at bay.

The fact that the DTH review has been called, and that the departments "intend to initiate a public process which will identify issues and pose questions to ensure that

there is complete, open and transparent consultation" is welcome news for Power DirecTV's Bell, who's raring to go. "We think that there's a very clear public interest case," he says, one where Power DirecTV hopes to prove that "attempting to protect Canada from the inevitable comes at a very high price."

Certainly the stakes are high enough: nothing less than Power DirecTV's entry into Canada, and the transformation of the video distribution sector from a cable-controlled monopoly into a competitive market.

And let there be no doubt that this could happen, assuming that the DTH review does strike down the all-Canadian distribution rule.

Should this come to pass, it would mean that "the Commission would look at its exemption order and its policies," says the CRTC's Allen, "and see what changes would need to be made to bring them in line with the government's decision."

Of course, the very fact of the DTH policy review doesn't guarantee Power DirecTV any advantage (any more than does the 13-year marriage

between the son of Power Broadcasting owner Paul Demarais and the Prime Minister's daughter).

Still, at the very least, it offers hope for Joel Bell, and fear for the Canadian cable industry, despite the brave words of Canadian Cable Television Association President and CEO Ken Stein, who says, "We believe the market's going competitive (thanks to the telcos) in any case."

That's why the results of the DTH policy review — and, more importantly, how they're implemented — will be watched with more than the usual interest by all the players involved. After all, what's up in the air here is not just Power DirecTV's business plans, but the nature of the entire Canadian TV industry. **IC**

James Careless is one of Canada's leading cable TV writers who publishes regularly in both U.S. and Canadian publications. He also is a broadcaster with credits at NBC, NPR and CBC, and a media consultant based in Canada's capital, Ottawa.

AUDIO, VISUAL & BROADCAST '95

The 6th International Exhibition

*** Featuring ***

Cable Television & Satellite Broadcasting

February 21-23, 1995

The Israel Trade Fair Center • Tel Aviv, Israel

Sponsored by:

The Ministry of Communication of Israel
The Cable Broadcasting Council
The Pay-TV Services of Israel

For further information:

Sigma Team Exhibition Organizers, Ltd.

Tel: 972 3 290055 or 972 3 291817

Fax: 972 3 528 1822

MPEG video compression: A European perspective

By Bruce Randall

It is now almost unthinkable to consider the development of integrated signal processing systems in anything other than the digital domain. The digitizing of signals has so many advantages: results can be perfect (or

at least completely consistent) despite endless processing, multiple copying, storage and transmission. Digital is efficient and extremely flexible. Digital is a great leveler; it reduces audio, video and data to common currency. Digital enables multimedia — that coming together of broadcasting, telecommuni-

cations and computer technologies.

But raw digital video is an extravagant beast and cannot be handled practically for long without some form of data reduction. A comparison with audio helps to explain why. Audio has a narrow frequency range but very wide dynamic range. Linear coding, such as for compact discs, is a luxury but some form of economy is required for domestic recording and transmission systems. One approach is to compress the dynamic range before transmission and expand it again in the receiver; very good quality digital audio can be maintained in this way for most purposes (e.g., NICAM). Video, on the other hand, has a much wider frequency range but already has quite limited dynamic range so it cannot usefully be compressed in that sense. Significantly, it also has a great deal of superfluous information (redundancy) both within and between individual frames and it is this that video compression can exploit.

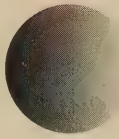
The international studio standard for digital video (CCIR Rec. 601) specifies 13.5 million samples per second for luminance and 6.75 million samples for each of the two color difference signals. Eight bits per sample (256 levels) gives the necessary dynamic range between white and black. This results in an overall bit-rate of 216 megabits per second (Mbit/s). Clearly something must be done to reduce this for use outside the studio.

Spatial and temporal redundancy

Video compression works both by exploiting the characteristics of the eye and by reducing the amount of unnecessary or repeated information contained in successive TV images. There is plenty of scope for removing unnecessary information in the time domain (temporal redundancy) in areas of the picture that are either not moving at all or are moving predictably. By putting a domestic video recorder into pause mode and advancing the frames slowly one at a time, it is easy to see how little difference there is normally between adjacent frames. Conventional transmissions simply waste capacity by sending repeated information. By trans-



World Congress presents



**World
Congress**

*This is the most important,
must attend two-day event
featuring the public and
private sector leaders in
telecommunication.*

The Americas Telecommunications Congress

*December 5-6, 1994
Hotel Inter-Continental
Miami, Florida USA*

Immediately preceding the Summit of the Americas
organized by the White House

The Congress will feature three concurrent summits:

Minister of Telecommunications and CEO Summit for chief executives of leading telecommunications companies and Ministers of the principal telecommunications markets in the region. By invitation only and limited in attendance, this summit will bring together the power circles that make prodigious telecommunications projects a reality.



Wireless Telecommunications Summit convenes industry leaders of wireless technologies with CIOs and MIS Directors of large regional telecommunications and related companies. They will discuss the applications of wireless technology in the resolution of communications infrastructure problems, as well as industrial and commercial applications.



Telecommunications Finance Summit is designed as a forum where the key Institutional Investors, Pension Fund managers, International Bankers, and Venture Capitalists have an opportunity to meet and work with CFO's of telecommunications related companies. They will discuss the opportunities for investing in the ground floor of the fastest growing industry sector in the Americas.



Among the key industry experts who will be speaking:

Howard Anderson, Managing
Director, The Yankee Group

George Brody, Director of Research,
Bell Northern Labs

Kevin J. Kelley, Vice President External Affairs,
QUALCOMM Inc.

James H. Quello, Commissioner, Federal
Communications Commission

Thomas Wheeler, President, Cellular
Telecommunications Industry Association

Dennis L. Whipple, President and CEO,
Contel Cellular

Bernell Wright, Vice President Strategic
Alliances, Citicorp Technology Division

Inquire about significant discounts for readers of
International Cable.

Complete this coupon and fax to 617-487-2775.

Name:

Title:

Company:

Address:

City:..... State/Province:

Zip Code/Postal Code:

Country:

Telephone: Fax:

Or write to: World Congress, Inc.
1000 Winter Street
Suite 3600
Waltham, MA 02154

wedc@ibnet.com

Table 1: Profiles, levels and compliance points

Level	Profile				
	Simple	Main	S/N	Spatial	High
<i>High</i>					
1,920 pixels		80 Mb/s			100 Mb/s (max)
1,152 lines	X	128 Mb RAM	X	X	256 Mb RAM
<i>High-1,440</i>					
1,440 pixels		60 Mb/s (max)		60 Mb/s (max)	80 Mb/s (max)
1,152 lines	X	64 Mb RAM	X	128 Mb RAM	128 Mb RAM
<i>Main</i>					
720 pixels	15 Mb/s (max)	15 Mb/s (max)	15 Mb/s (max)	X	20 Mb/s (max)
576 lines	8 Mb RAM	16 Mb RAM	32 Mb RAM	X	32 Mb RAM
<i>Low</i>					
352 pixels		4 Mb/s (max)	4 Mb/s (max)		
288 lines	X	4 Mb RAM	8 Mb RAM	X	X
	Simple	Main	S/N	Spatial	High
	No B-frames	B-frames	B-frames	B-frames	B-frames
	4:2:0	4:2:0	4:2:0	4:2:0	4:2:0 or 4:2:2
	Not scalable	Not scalable	S/N scalable	S/N scalable, Spatial scalable	S/N scalable,

(X indicates "not defined")

Notes: A maximum of one S/N enhancement layer (in addition to the base layer) is allowed in S/N Scalable, Spatially Scalable and High profiles. A maximum of one spatially scalable enhancement layer (in addition to base layer and S/N enhancement layer) is allowed in Spatially Scalable and High profiles. Lines per frame refers to number of 'active' lines. RAM figures are estimates for decoders and will depend on the implementation.

mitting only the changes between frames, large economies can be made. But video compression goes much further than that. By looking at the frame before and possibly the frame after, it can predict movement; the more predictable the movement, the better it can be represented with minimal transmitted data. For this purpose the picture is divided into blocks of 16 lines by 16 picture elements (pixels). Having computed the difference between the predicted and the actual picture block, only a motion vector and the difference information is transmitted to the decoder.

MPEG distinguishes three types of frame for encoding purposes. Intra (I), forward-predicted (P) and bidirectionally predicted (B). I frames are coded independently and are therefore complete pictures or reference frames. A bidirectional decoder will use B frames to look backward and forward in time when rebuilding the motion sequence from the reference I frames and the P frames as they variously occur.

It is, of course, possible to fool the

algorithm: a rapidly moving football may result in a local loss of background detail, even though the ball itself may stay sharp. It is vital that any motion artifacts are very subtle in broadcast applications and that they will not be apparent except to the expert eye.

There is also unnecessary information that can be removed within individual frames of the picture (spatial redundancy) in areas that contain little detail, such as an area of blue sky. Here, the picture is divided up into blocks of 8 by 8 pixels. Block by block, discrete cosine transform (DCT) coding converts the time-varying video signal into sets of coefficients in a frequency-like domain designed to match the known sensitivities of the eye. Areas of uniform content can be described very easily with only a few frequency terms, while areas of great detail demand many (higher order) terms. The DCT process in itself does not save any data, however the transformed coefficients are quantized to discard the less important information. A process of zig-

zag scanning allows the coefficients to be taken in frequency order, with increasing likelihood of zero-value coefficients. Further savings are then achieved by run-length coding, which is an efficient way of describing an uninterrupted run of zeros. The amount of nonredundant information varies according to the content of the video material, therefore a feedback mechanism and output buffer are used to give a constant output matched to the chosen bit rate. Material with substantial detail and irregular motion is therefore the most critical test of a video compression system.

MPEG

There are various proprietary methods of compressing video. However, the Moving Picture Experts Group (a working group of the International Standards Organization) was set up to standardize and optimize the "coded representation of audio, picture, multimedia and hypermedia information." The first standard to be agreed, MPEG-1, was designed for reduced-definition pictures (about half the vertical and horizontal resolution of standard TV) at bit-rates around 1.5 Mbit/s. This is intended for consumer level applications such as full-motion video on CD, video-on-demand and the PC/multimedia environment.

But digital developments move fast and MPEG-2 was waiting in the wings, close to final agreement. The MPEG-2 committee was set up in 1992 with a brief to consider coding at higher rates (e.g., between 2 and 10 Mbit/s) for broadcasting and video recording. Its brief has since been extended to include even higher resolution for HDTV purposes, originally planned to come under MPEG-3. In September 1993 the European Digital Video Broadcasting (DVB) group was formed and adopted MPEG-2 as the standard for digital satellite, cable and terrestrial broadcasting, with appropriate modulation schemes. The DVB project now represents 144 member organizations from 17 countries, covering the whole industry. By late 1993 it was clear that a commonsense and coordinated approach to digital TV standards would apply in Europe and possibly the world.

Meanwhile, back in 1992, MPEG-4 had been formed to look into digital video transmission at very low bit rates (tens of kilobits) for future applications such as video-based cellular phones. →

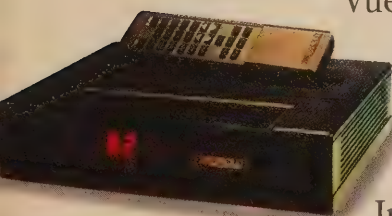
Nueve De Diez Psiquiatras Recomiendan VueScan.



Elimine Todos Sus Dolores De Cabeza. Llame Primero A VueScan.

Los problemas de entrega lo están
volviendo loco?

VueScan mantiene un
gran inventario
para entrega
inmediata de
General
Instrument,
Comm/Scope, Lectro,



CableCon, Gilbert y muchos más.
Por qué pagarle a un psiquiatra. . .
cuando VueScan puede eliminarle
todos sus dolores de cabeza.

Llámenos
gratis a los
siguientes
números:



Argentina

☎: 001-800-465-8846
fax: 001-800-466-8846

Brasil

☎: 001-811-951-5548
fax: 000-811-951-5549

Mejico

☎: 95-800-010-0695
fax: 95-800-010-0694

VueScan U.S.A.

☎: 305-427-5000
fax: 305-427-0934

Table 2: Application-specific bit rates

		Compressed bit-rate per TV channel (Mbit/s)
1,250-line	HDTV professional quality	32-40
1,250-line	HDTV domestic quality	16-20
625-line	professional quality	8-10
625-line	domestic quality	4-5
312-line	domestic quality	1-2

MPEG-2

Let us now concentrate on MPEG-2 and what it offers over and above MPEG-1. In general MPEG-2 represents a super-set of MPEG-1; decoders for the former must be able to decode signals from the latter. This gives a unified MPEG family to suit all applications from video conferencing to HDTV. Some of the more important MPEG-2 features are:

- Different chrominance sampling formats (4:2:0, 4:2:2 and 4:4:4) are supported
- Both progressive scan and interlaced video
- Decoder can use 3:2 pull-down for 24 fps film on 30 fps video
- Moveable pan-scan window display from larger raster
- Wide range of picture qualities
- Constant and variable bit-rate channels supported
- Low delay mode for face-to-face (two-way) applications
- Random access to bit-stream (for easy acquisition, channel hopping, etc.)
- MPEG-1 bit-stream decodable
- Editing of encoded video supported
- Fast-forward and fast-reverse of recorded bit-streams
- Encoded bit-stream resilient to errors

A central element in all MPEG systems is flexibility in the level of picture quality, largely determined by the chosen bit rate. In MPEG-2, however, scalable coding is allowed for, where a quality hierarchy can be transmitted simultaneously. For example, a standard-definition signal can be embedded within an HDTV signal so that simpler, cheaper decoders can receive the lower-definition service or be made more rugged for reception under adverse conditions. For terrestrial reception, scalability could provide HDTV for fixed rooftop antennas, standard-definition for cheaper receivers using integral indoor antennas, and a reduced-quality (but even more rugged) picture on hand-held or mobile

receivers. This re-introduces, to some extent, the benefit of graceful degradation that is very much an analog concept but one that may prove crucial for terrestrial digital systems.

Scalability is introduced by structuring the total bit-stream in up to three layers, starting from a stand-alone base layer and adding one or two enhancement layers. In order for MPEG-2 to offer flexibility across a wide range of applications and quality levels, a matrix of modes is generated from the permutations of defined profiles and levels. A profile is a defined subset of the entire bit-stream syntax. However, within each profile, it is still necessary to select performance levels for encoding/decoding from the wide range of possible values taken by parameters in the bit stream. For example it is possible to specify frame sizes as large as 2^{14} samples wide by 2^{14} lines high. It is neither practical nor economical to make a decoder capable of dealing with all possible frame sizes. Hence, levels are a defined set of constraints corresponding, for example, to the image format used for the input. The lowest level is at 1/4 CCIR Rec. 601 picture format, while the highest is an HDTV picture with 1,920 samples per line. (See Table 1 on page 68.)

Prior to transmission, video, audio and other data are combined into a multiplex known as the MPEG-2 transport stream. This is a fixed-length packet system where each packet has 188 bytes, 184 of which contain useful data. Finally MPEG-2 adds a service information system called program specific information. This labels each service in the multiplex and tells the receiver essential details such as which audio channels go with which video channels.

Quality and bit-rate

How do we use this new-found efficiency in broadcast transmission? The total bit rate capacity of transponders will be divided up according to the technical requirements of the applica-

tion. However, commercial factors also will influence how the capacity is used in practice. Table 2 gives an indication of the bit rates needed for various applications.

With a wide-bandwidth transponder able to handle at least 80 Mbit/s, simple division gives some idea of what can be achieved. It is largely a trade-off between picture quality and number of services. There are also differences in various manufacturers' implementations of MPEG. Just as all 486 computers are not the same, there will be differences in the picture quality obtained from different MPEG-2 products; much depends on how well the various functions are carried out.

Fully integrated systems

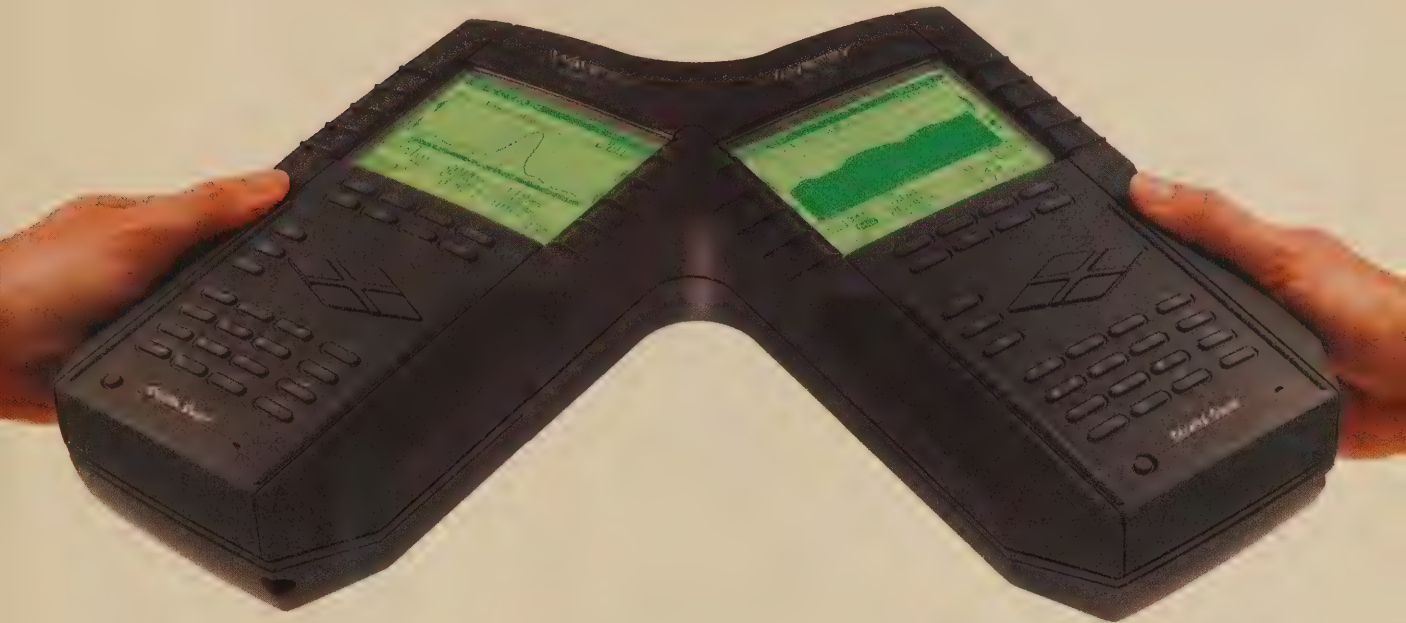
Fully integrated multichannel digital TV systems have been developed, some accommodating up to 18 TV services, in which all user functions are computer-controlled on a channel-by-channel basis. Bit rates can be assigned individually between 1 and 15 Mbit/s.

The exact choice of bit rate will depend on the quality required and the type of program material. Fast-moving video such as live sports coverage will require more capacity than talking heads or romantic movies. It will generally be possible to choose a bit rate that suits a particular channel so that viewers will hardly, if ever, be aware of any digital artifacts. The next stage of development will be to allocate bit rate dynamically where it is needed within a multichannel package. This so-called statistical multiplexing should result in even more efficient use of the spectrum.

Transmission

Applied to a satellite transponder, digitally compressed signals can be handled effectively with a simple form of quadrature amplitude modulation known as quadrature phase shift keying (QPSK). Here, two carriers which are nominally 90° out of phase are modulated to represent pairs of bits to be transmitted. Each carrier's phase can be set to one of two possible states (0° or 180°) and so only four possible phase states result, representing the four combinations of bit-pairs (00, 01, 10 and 11). For a bit rate of say 8 Mbit/s the transponder bandwidth occupied would be about 6.75 MHz, and the bandwidth allocated to the channel would be about 8 MHz. It

Only One Sweep System Leads a Double Life!



Stealth Sweep...

Stealth Reverse Sweep...

STEALTH REVERSE SWEEP



PUT REVERSE SWEEP CAPABILITY INTO YOUR HAND

The Stealth Reverse Sweep... The latest sweep technology has been enhanced to meet your reverse sweep testing needs. Forward and return path alignment can now be done simultaneously – and by one person – with one instrument – the handheld Stealth.

Engineered for the interactive revolution, the Stealth 3SR handheld unit with the reverse sweep option both receives and transmits sweep for fast, precise, and accurate measurement of **both** the forward and reverse paths.

Eliminating large, complicated equipment setup results in simplified testing, reduced fatigue, and less time maintaining your system. You'll wonder how we squeezed in so much capability.

Features include:

- Built-in sweep transmitter
- Simple, user interface
- Sweep any return band from 5 - 1,000 MHz
- Fast, continuous reference sweep
- Stealth Sweep ... a Wavetek exclusive, tests without interrupting viewer reception
- Signal analyzer for carrier levels, C/N, hum, tilt, and spectrum display
- Automated interval testing capability

The Stealth Reverse Sweep provides all the accuracy, speed, and features you'd expect from the leader.

So, get the smallest, fastest, lowest priced, most capable sweep on the market. Get the Wavetek Stealth.

Worldwide Sales Offices...

Asia Pacific	(852) 788 6221
China	(861) 500 2255
Southeast Asia	(65) 754 5520
Europe	(49/89) 9609490
United Kingdom	(44/1603) 404824
United States	(317) 788-9351

Wavetek... partners in productivity for over 25 years.



COAST CATV SUPPLY, INC.

314 Elizabeth Lane
Corona, CA 91720

Ph: (909) 272-2360
Fax: (909) 272-3032

BEST PRICES

From Coast to Coast
WE BUY and SELL
SPECIALIZING IN
NEW, USED or
REMANUFACTURED

- LINEGEAR
- PASSIVES
- CONVERTERS
- HEADEND

CALL TODAY

With Your Requirements

LARGE QUANTITIES IN STOCK

"We accept MasterCard, Visa and American Express"



Reader Service Number 79

REPRINTS REPRINTS REPRINTS

**Communications
Visibility
Knowledge
Information**

Reprints work for you!

For more information
call Marla Sullivan at
303/839-1565

is therefore possible to transmit eight such separate carriers comfortably in a 72 MHz transponder. Similar capacity is obtained from one or two carriers containing time-division multiplexed services. Given that the annual charge for a transponder may be as much as £3 million, for a fully occupied 72 MHz transponder with 8 Mbit/s per channel, the cost per channel is reduced from £1.5 million (two FM carriers) to about £400,000.

For applications where the picture quality requirements are less demanding, lower bit rates can be used, possibly offering further cost reductions. Plans announced for Astra 1E suggest that the 18 33 MHz transponders will each have a gross bit-rate capacity of 55 Mbit/s. The actual usable bit rate will be rather less, owing to the need to allow for forward error correction. Even so, a single broadcasting satellite could deliver over 300 digital channels directly to homes across the whole of Europe, using receiving dishes smaller than for analog.

It may not be convenient or possible to transmit all the channels for one transponder in a single multiplex from the same uplink site. With multiple carriers in one transponder, frequency division multiple access (FDMA), it is necessary to reduce the drive to the transponder to achieve the best trade-off between wanted signal power and intermodulation noise power. The bonus is that, if separate carriers are used, because of the high back-off, only very modest power levels are required from the uplink. Receiving dishes still remain similar to those used for analog systems due to the increased ruggedness of digital signals, especially with the lower data rates associated with multiple carrier applications.

Cable and terrestrial transmission will require more complex forms of modulation. Extending the QPSK principle, so that each carrier can be set to one of two amplitude states, produces 16 possible combinations of amplitude and phase for the pair of carriers. This is known as 16-QAM. Systems with 64 or 256 states are known as 64-QAM and 256-QAM, but as higher orders of modulation are adopted the ruggedness of the digital signal suffers and transmit power needs to be increased to compensate. Nevertheless, such a hierarchy of related modulation schemes usefully lends itself to scalable MPEG-2 encoding. For terrestrial

transmission in particular, orthogonal frequency division multiplex techniques have proved very successful. Rather than have a single high data rate carrier, the modulating signal is split and applied to a block of hundreds of overlapping low data rate mini-carriers — parallel data transfer instead of serial. The mini-carriers are orthogonal in phase (90° apart) to help separate them in the demodulator and the whole block is relatively immune to interference and multipath distortion.

Migrating to digital

Test transmissions by NTL and Eutelsat have proved that a digital TV signal can be added to an existing analog satellite channel without interference in a single 36 MHz transponder, allowing an inexpensive and gradual transition to digital broadcasting. The tests show that one analog channel with multiple sound carriers can occupy 27 MHz of the bandwidth of a transponder, while the digital channel, using the remaining 9 MHz, can transmit a video signal exceeding normal broadcast quality with near-CD sound and auxiliary data. While allowing a gradual transition between the two technologies, the simulcast option enables digital to be introduced for cable headends while maintaining analog for direct-to-home reception. Alternatively it could allow broadcasters to use the same transponder for high-quality satellite news gathering.

What next?

The technology of digital video compression is now reaching an advanced stage. First generation systems already span the globe for professional distribution purposes. MPEG-2 multi-channel digital transmission systems have now been developed and these could be in use over satellite as early as next year. Further reductions in bit rate seem unnecessary for broadcast use as other fixed costs of delivery begin to dominate. Even so, there is the potential for an almost unlimited number of program channels via satellite, cable and terrestrial systems. Further developments can be expected in transmission down telephone lines and domestic video recording formats. And much is still emerging in the fields of transactional and interactive multimedia. **IC**

Bruce Randall is public relations manager with NTL.

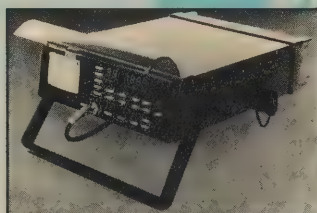
On Top of the World

with

Antenna Technology Products



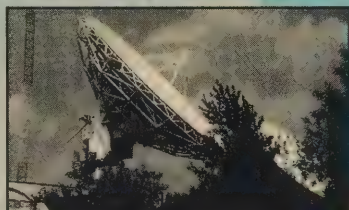
SIMULSAT
Multibeam Antenna



Vanguard Instruments, VI 2.0
Satellite Analyzer, Receiver, Monitor



Parabolic Antennas
from 1.8 to 32 Meters



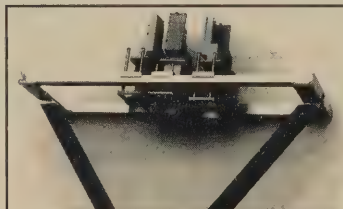
Large Aperture Antennas
Both New & Used

Complete Turnkey Systems

Voice & Data
Digital Audio Radio
Headend
TVRO
Cable
Switching
Transportable



PROF LINE Professional
Headend Electronics



Parabolic Retrofit
Systems

Antenna Accessories/Equipment

LNA's
LNB's
Processors
Receivers
Modulators
Demodulators
Test Equipment

Earth Station Equipment

Antennas, C & Ku-band
Flyaway Antennas
Intelsat Compatible
Land Mobile Satellite
Consult, Design
Technical Services
Installation



Antenna Technology Communications, Inc.

Feed Systems

Filters
Mounts
Coaxial Cable
Fiber Optic Cable
SCPC Equipment
Antenna Protection Equipment
De-Icers

1128 East Greenway • Mesa, AZ 85203 • 602-264-7275 • Fax: 602-898-7667

The race for digital will be hard won

By Margaret Popper

European satellite, cable and terrestrial TV broadcasters are in a risky race to offer digital transmission services. Digital video compression appears to represent a huge opportunity, but for terrestrial, satellite or cable TV operators it can be a threat as well.

Gwyn Morgan, senior partner at Television Projects International, said in an address to cable and satellite executives in London, that some companies need digital compression like they need a hole in the ozone layer, and for others it is a road to the stars.

Whether they are for it or against it, media concerns need to face the fact that digital compression is now an unstoppable force. Not only does it

work, it is proving useful. There are only two options for companies that perceive the technology as a threat to their current business: Try to hold it off for as long as possible or jump on board now. Operators of delivery systems who take the former approach may find themselves in the position of buggy whip manufacturers after the advent of the automobile.

The phenomenal acceleration of digital technological development in the last few years largely has been the result of focus on a common standard: MPEG-2, which stands for Moving Picture Experts Group. This technology was preceded by the Joint Picture Experts Group (JPEG).

All the Picture Expert Groups (PEGs) have one feature in common. They all take images, digitally code

them and remove everything that could possibly be redundant or invisible to the human eye. This process is called compression. By compressing the huge amounts of data contained in a visual image, this technology enables digital data to be stored in much less space than was required to store the original picture.

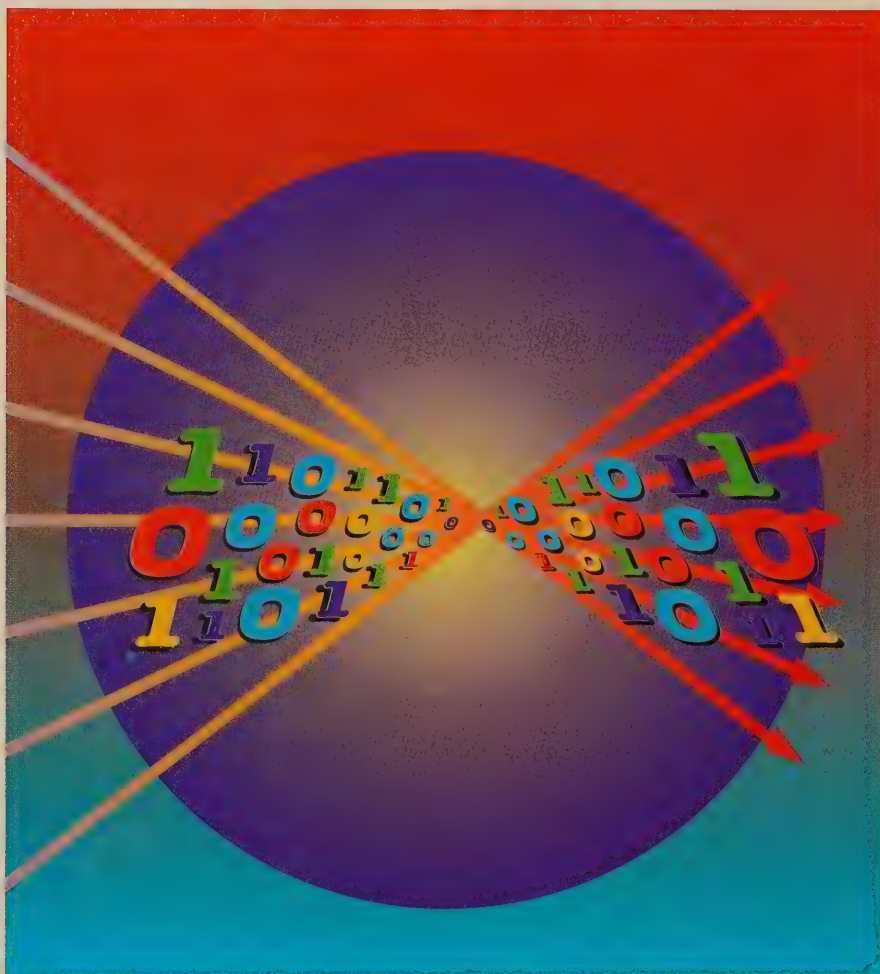
Compression and decompression processes must work efficiently to maintain the quality appropriate for particular applications. The pictures in a glossy coffee-table book require a higher print quality than photos printed in a daily newspaper. Likewise, in broadcasting a sequence that needs to go through a complicated studio process like color separation overlay, higher quality is necessary than for broadcasting the image that finally lands on a 14-inch TV screen in a viewer's kitchen.

From MPEG-1 to MPEG-2

The forerunner to the latest MPEG-2 technology, MPEG-1, focused its attentions on interactive video derived from videodiscs. In that medium the realistic data rate that a disc player could deliver was about 1.5 Mbits per second. MPEG-1 is said to deliver the display equivalent of VHS videotape, but in reality the picture is much cleaner. MPEG-1 settled for stereo audio — enough to squeeze out of the technology, but not enough for the future of broadcasting.

MPEG-2 is an enormous leap forward. It defines fundamental signal structures and processes that will contribute to broadcasting and other delivery methods for a very long time.

MPEG-2 can deliver high-definition displays for the very large screens that will eventually be the norm in times to come. It can deliver five-channel surround sound. It can deliver many sound sources at the same time so the viewer could actually be in a position to choose the language in which he or she wants to watch a program. MPEG-2 links pictures, sound and data in a highly flexible fashion so that a broadcaster can insert different advertisements in different countries or local areas — all broadcast as



Power-passing Splitters And Outdoor Taps

From a CATV/MATV specialist



Specifications

Magnetic Resonant Power Supply

Model No.	ST-400	ST-600	ST-900	ST-1200	ST-1500
Capacity	4A	6A	9A	12A	15A
AC/ Input	Voltage	110V or 220V \pm 15%			
	Phase	1 Φ 2 W/G			
	Frequency	50 or 60 Hz			
	Wave Form	Sinusoidal wave			
AC/ output	Voltage	60V or 40V \pm 1%			
	Phase	1 Φ W/G			
	Frequency	50 or 60Hz			
	Wave Form	Square wave			
Efficiency		Over 85%			
Short circuit protection		Voltage may equal zero, breakdown eliminated and return to normal			
Dimensions		20X18X26cm	20X19X32cm	20X19X36cm	
Weight(N.W.)		8kg	10kg	13kg	15.5kg 17kg

UPS'S CHARACTERISTICS:

1. IT'S USED EXCLUSIVELY FOR CATV/MATV SYSTEM.
2. THE POWER OUTPUT IS ABLE TO STAND A PERMANENT SHORT-CIRCUIT.
3. ALUMINUM OUTSHELL IS LUCKABLE AND ABLE TO BE HANG ON THE WALL AND PILLAR.
4. ELECTRIC FIELD IS CLOSED COMPLETELY, NO INTERFERENCE. A PROTECTION FOR STANDING SURGE
5. DC VOLTAGE INPUT CHANGE FROM DE 36V TO AC 60V WITH HIGHT EFFICIENCY, LOW BREAKDOWN CHANCE AND LONG LIFE.
6. PRODUCT IS DESIGNED WITH MODULE, STRUCTURE IS VARIOUS DEPEND ON CUSTOMER'S REQUIREMENT.



Contact us today for further information.

With 12 years' experience in manufacturing and exporting, we know our products are reliable and of the highest quality.

We specialize in the manufacture of CATV/MATV systems. Our products are developed by our experienced R&D team and are under strict quality control. Contact us today for further information.



Manufacturer & Exporter

HUA-U ELECTRONICS CO., LTD.

No. 292, Chang Lu Rd., Hsiu Shui Hsiang, Changhua Hsien, Taiwan

Tel: 886-4-7680318-9 886-4-7682505-6 Fax: 886-4-7680392

Reader Service Number 85



part of the same signal path. MPEG-2 can mix and match image quality so as to squeeze the most out of a satellite transponder or a cable channel.

In principle, MPEG-2 can cope with an extremely wide range of options, combining different processes for compression and decompression of images with various levels of picture definition to achieve different rates of data transmission. Some of the more advanced functions in MPEG-2, such as scalability, will not be needed until terrestrial TV and high-definition TV become more worthwhile targets.

But MPEG-2 is not everything. It does not define complete systems, but rather defines a central core of the system: the way the pictures are processed, the options for sound processing, and the way the data packets are labeled and carried.

MPEG-2 does not describe the modulation process that will depend on how the signal is carried, be it satellite, cable or terrestrial. Different methods of carriage need different methods of forward error correction: the technique that keeps the data in good condition when it eventually gets to the MPEG decompressor. Since most digital broadcasting in the near future will be pay TV, not free TV, there need to be systems for scrambling and conditional access. A consistent method of labeling services will have to be developed.

European DVB

In Europe all these elements have been the focus for the European DVB development group. The group has been working on an agreement for a common Europe-wide approach on as many elements of the digital system as possible. The standards have nearly been agreed upon for satellite TV. The sticking point is conditional access, the method of controlling reception. This technique is a significant bone of contention in the European standardization process because it threatens the status quo in pay TV.

The DVB has groups concentrating on three technical areas in attempting to set standards for digital transmission: satellite, cable and terrestrial TV. Digital satellite TV offers wide bandwidth and reliable reception characteristics. Digital cable TV needs the potential to use small elements of bandwidth, a form of amplitude modulation, and may have to

“Whether they are for it or against it, media concerns need to face the fact that digital compression is now an unstoppable force.”

cope with radio frequency interference.

Digital terrestrial TV faces extreme difficulty with numerous problems along the signal path to the viewer. A new modulation technique called COFDM may be the answer to providing high-quality mobile TV reception for digital terrestrial transmissions.

Star wars

For now the race is on to find system solutions for cable and satellite TV. Digital satellite applications are already in place. The best-known mass-market application is Hughes' DirecTV in the U.S., which is reportedly selling out. The Hughes system has been developed by the U.S. arm of Thomson Consumer Electronics. The DirecTV system was contracted and specified in 1992 so it has to rely on an enhancement of MPEG-1 technology, rather than MPEG-2.

Eutelsat's Hotbird will be launched in the winter of 1994. This is likely to carry several digital feeds using MPEG-2 technology. Initially they are likely to aim at delivery to cable headends, but what may well be the first proper application of full MPEG-2 should have mass-market potential as well.

Certainly from a broadcasting perspective, the MPEG-2 technology on the Hotbird will provide new facilities that make practical market sense. It will allow one satellite transponder to transmit between four and 10 video services, cutting overall distribution costs. The technology also will allow a broadcaster to switch different advertisements into ad breaks in different countries: French ads for France, German for Germany, etc. Not only can a broadcaster broadcast in different languages with the same images, but it also can broadcast totally different ads neatly cued into the same break and appearing to different audiences across Europe in

the same digital multiplex transmission.

It is possible that Eutelsat could steal a march on Astra in the competition for the hot spot in the sky. Eutelsat is encouraging users to carry both an analog feed and a digital feed on the same transponder as one way of making a soft transfer to digital operation. Companies like Maxat are supporting the switch to digital by offering to carry single channels combined into a multiplex of services.

The Simulcrypt controversy

The DVB has agreed on a common form of scrambling, the method by which the pictures and sound are made unwatchable. The next step is to agree on a mode of encryption, the process that controls scrambling and permits viewers to see only those services for which they have paid.

Canal+, Multichoice (FilmNet), Telepiu and BSkyB (together with its conditional access partner, News Datacom) are proposing Simulcrypt as the answer. Each of these companies would offer the conditional access services of Simulcrypt in a specific region so that all of Europe would be covered. The idea is for the map of Europe to be partitioned among them in some manner relating to their current market activity. A broadcaster aiming at the U.K. would only use the News Datacom/BSkyB system of conditional access. A broadcaster transmitting a broadcast across the whole of Europe would use all the systems.

The proposal is controversial in that it effectively provides a monopoly for these operators in each territory. Broadcasters that do not operate large pay TV systems worry that they will be subjected to unfair trade practices.

The Simulcrypt group claims that initially subsidization of decoder sales to make them affordable will be necessary to allow the digital market to take off. It says it cannot take on that risk unless the Simulcrypt proposal is adopted. Without the proliferation of digital access technology, the satellite TV industry could be strangled at birth, the group claims. Currently the Simulcrypt consortium is attempting to put together a self-regulatory "code of conduct" to allay broadcasters' fears, but the efforts are getting bogged down in politics. →

High Quality
Low Price

WINERSAT

Manufacturer & Exporter

**WINNERS SATELLITE
ELECTRONICS CORP.
CANNER COMMUNICATION
CORP.**

3F, No. 4, Lane 263, Chung
Yang Rd., Taipei, Taiwan, R.O.C.
Tel: 886-2-7820711 (Rep.)
Fax: 886-2-7828490, 7861450
Tlx: 10580 WINERSAT



WR-3000 Stereo Receiver

- Full Band Channels from 950 to 1450 MHz
- Manual • Stereo Output
- IF Bandwidth 8-32 MHz tunable
- Audio Bandwidth 110-280 KHz tunable
- With AGC and AFC



WR-582 CHANNEL KING

(MULTI-ROOM VIDEO SYSTEM)

- 470-890 MHz output frequency agility
- NTSC: CH14-CH83 PAL-G: CH21-CH69
- PAL-K: CH13-CH57



WTC-301 CATV SET TOP CONVERTER

- NTSC 54-564 MHz, CH13 or 3 output
- PAL-B: 47-550 MHz, CH3 output
- PAL-D: 54-564 MHz, CH4 output
- Favorite channel setting
- Security code setting



WR-912C/912L Satellite Receiver

- Multi-Languages OSG Display
- IR Remote Control • Stereo Output
- 99 Channels Programmable
- Input Frequency 950-2050 MHz
- Auto Scan Program Available
- PLL Synthesized Frequency Tuning
- WR-912L: Dual RF Inputs 18/27 MHz IF Bandwidth Switchable
- WR-912C: Single RF Input 27 MHz IF Bandwidth



WR-200 IRD Satellite Receiver

- Infrared Remote Control • Color On Screen Display
- Two RF Inputs & Two IF Bandwidths (18/27 MHz) with TI Filter
- More than 50 Satellite Positions Memory
- 60 Favorite Channels • Built-in Antenna Positioner
- Parental Lock • Direct Channel/Satellite Access



VCR-100 CATV COMMERCIAL RECEIVER

- NTSC and PAL available
- Direct frequency entry (1MHz steps)

VDM-200L AGILE DEMODULATOR

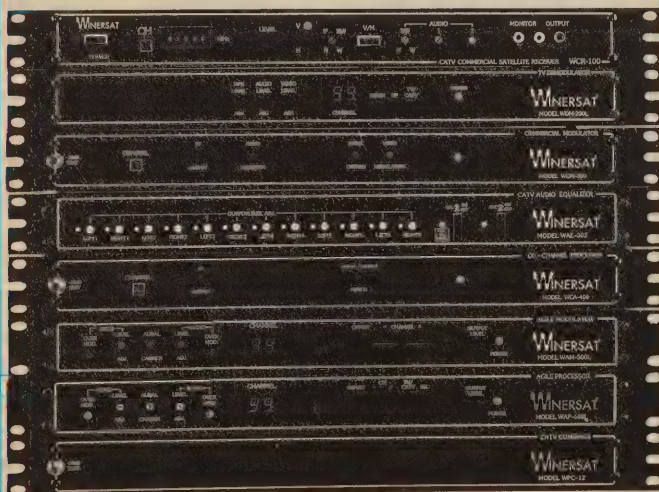
- NTSC: 54-806 MHz
- PAL-B: 46-870 MHz
- PAL-D: 48-870 MHz
- CPU control with LED display
- MPX output optional

VCM-300 MODULATOR, FIXED CHANNEL

- 55dBmV output
- NTSC: 2-13, A-W
- PAL-B: CH E2-E12, S1-S20
- PAL-D: CH DS1-DS12, Z1-Z17

VAE-302 CATV AUDIO QUALIZER

- Audio input: 6 stereo or 12 mono CHs
- Input level: ± 18 dB, Tolerance: ± 0.5 dB
- Output level: 0-2Vpp (1Vpp preset)



WCA-400 ON-CHANNEL PROCESSOR

- Fixed Channel
- NTSC: CH2-13
- PAL-B: CH E2-E12 PAL-D: CH DS1-DS12

WAM-500(S)L AGILE MODULATOR, with LED

- 40-450 MHz output frequency agility
- NTSC: CH2-YY
- PAL-B: CH E2-S39
- PAL-D: CH DS1-Z36
- Output Level: 40 dBmV (WAM-500L)
60 dBmV (WAM-500SL)

WAP-600(S)L AGILE PROCESSOR, with LED

- NTSC: 54-806 MHz, CH2-YY output
- PAL-B: 46-870 MHz, CH E2-S39 output
- PAL-D: 48-870 MHz, CH DS1-Z36 output
- Output: 40 dBmV (WAP-600L)
60 dBmV (WAP-600SL)

WPC-12 CATV Combiner

- Frequency Range 5-600 MHz
- Insertion Loss 16 dB
- Isolation 35 dB paired ports;
45 dB unpaired ports
- Flatness ± 1 dB
- Test Point -20 dB

OEM/ODM/SKD WELCOME

Reader Service Number 49

Cable TV in a digital world

Cable is undoubtedly the most powerful multichannel delivery medium in Europe. CIT Research says that more than 24% of Western European homes watch television over cable systems. In some countries this means that virtually all homes are connected to cable. Even in the U.K. where cable has been second to satellite delivery and where both are way behind terrestrial delivery, the cable growth rate is forecast to outstrip satellite growth in 1995. By 2002, perhaps sooner, more U.K. homes are expected to be watching cable than satellite.

But the U.K. still has a large cable penetration gap to close when compared to countries like Belgium where more than 98% of TV homes are connected to cable. In Belgium, cable systems are effectively full and have no spare capacity to handle the growth in the number of available services that already has taken place and will expand still further in the next few years.

Cable has more of a need for digital compression than satellite TV. Today many European cable systems are limited to 26 channels. There are already 48

channels on Astra satellites alone, and another 16 to come with the launch of Astra 1D at the end of 1994.

In order to compete effectively, some cable systems will adopt digital compression before it is used for the satellite mass market. The commercial tensions arising from the switchover are enormous, and the specter of competitive threat far outweighs the perceived value of the opportunity for some cable operators.

Subscription TV using analog delivery has been very successful in Britain, with some 2.5 million homes now paying for their services. BSkyB is widely regarded as a strong performer. Having invested approximately £2 billion (US\$3.08 billion) in its network, the company has finally reached operational profit. Some industry watchers say that BSkyB could go public at any moment and easily find its flotation oversubscribed, but others view the business as still fragile and susceptible to damage from overzealous regulators.

Transcontrol

The regulation of cable is already extensive and protection for viewers

is considerable. It is also a highly competitive industry in which players compete by comparison, even if they do not always compete on the same street for the same audience. Cable operations differ enormously across Europe, having emerged from very different political, technical and commercial conditions in each country.

There is a trend toward establishing a complete and integrated cable business that manages its own investment in laying the cable and establishing the system, seeking a long-term commercial return on investment through carefully marketed packages of programming. With a payback period of 15 years or more, and a level of investment that is between five and 10 times that of pay TV operators, cable operators need to be certain that they can manage their investment and marketing.

Although in this environment cable operators could potentially make their choices of digital systems individually, it is unlikely that most cable operators will want to foot the bill for establishing their own digital encoder systems at each headend.

Cable operators already have declared an interest in Transcontrol, a system that enables digital services available off-air to be repackaged so that a cable operator could re-multiplex services, for example, taking two Sky transmissions and mixing them with two German and one Italian transmission. At the same time, cable operators would impose their own form of conditional access control to manage the business within their franchise areas.

The biggest risk for cable operators lies in the way Transcontrol would be developed and licensed. There is the potential that pay TV broadcasters would impose commercial leverage on cable operators, a turn of events that would need to be limited by a code of conduct to reassure cable operators that they can safely develop their digital strategies.

With the vast potential viewership of cable, effective and commercially acceptable solutions to Transcontrol are crucial to speedy development of the digital market, but currently it is a neglected area of standardization. **IC**

Margaret Popper is editor of "European Media Business & Finance," a Phillips Business Information publication.



MHz
MEGA HERTZ
Established 1975

STOCKS



General Instrument



Model S450P

S450M (MODULATOR) S450P (PROCESSOR) S890D (DEMULATOR)



FFT Taps (2, 4, 8)



**Mainline splitters,
couplers & power inserters**

"Call us for all your Jerrold requirements"

DENVER
800-525-8386
303-779-1717
FAX: 303-779-1749

ATLANTA
800-962-5966

ST. LOUIS
800-821-6800

SPECTRUM
800-628-0088

"Unique" Products for the 21st Century!

Reader Service Number 80



Phillips
Business
Information, Inc.

Linking You To The World Of Cable!



COMMUNICATIONS TECHNOLOGY

*The official trade journal of the
Society of Cable Television
Engineers*

Every month, *CT* keeps 21,000 cable engineers up to date with the emerging technologies of this dynamic industry, covering coaxial and fiber-optic construction techniques, preventive maintenance, product and industry news, and more.



INTERNATIONAL CABLE

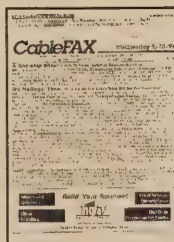
*Covering the global business of
multichannel delivery systems*

International Cable magazine provides leading-edge perspective in such areas as operations, technological advances, programming, finance and marketing. Published monthly, *IC* focuses on the business of multichannel delivery systems...nation by nation.



COMMUNICATIONS TECHNOLOGY PRODUCT NEWS

CT Product News is a tabloid-size magazine solely dedicated to introducing new products for the converging CATV, telco, broadcast, PCS, wireless and interactive industries. *CT Product News* keeps its over 30,000 readers up to date with the emerging technologies that are driving these evolving marketplaces.



CableFAX

The first, most famous and informative daily fax service committed to the American cable TV industry. *CableFAX* includes Early Warnings: Hot Industry Topics, "BellWatch" telco news-bites, Daily Stock Watch Chart, plus Paul Maxwell's weekly column.



Call Today For More Information!

Subscriptions 1-800-777-5006 Advertising: 1-800-325-0156

1201 Seven Locks Road Suite 300 Potomac, MD 20854 301-340-1520 301-340-0542

Truly interactive TV is still a long way off

By Margaret Popper

This summer, executives from all over Europe met in London to discuss the latest developments in cable and satellite TV. Among others, Paul Kempton, director of Media Matrix, gave his views on video-on-demand and interactive TV, focusing on developments in the U.K. market. Following are his comments edited for publication.

While interactivity has been much touted over the last few years, most forms of the technology that have emerged to date enhance viewer choice rather than providing true interactivity. While the technology developed for video-on-demand (VOD), near-VOD (NVOD) and pay-per-view (PPV) lays the foundation for the information superhighway, it has not yet reached the level that would turn television viewing from a passive to an active form of entertainment.

Before the age of interactivity is upon us, there are still several hurdles to be jumped, and they are not merely technical ones. As efforts increase to develop video-on-demand, questions are arising about who will control delivery of the service, the types of applications that will be made available, where the programming will come from, how its quality may be monitored or maintained, and how rights to intellectual property will be protected.

BT against the world

Although fiber-optic telephone lines will be able to bring interactive services into every home that has a telephone line, the satellite and cable market in the U.K. remains relatively small.

This would seem to give the edge to the phone companies like British Telecom (BT) and Mercury over cable operators in terms of distribution potential, but they face regulatory problems that do not affect their cable competition. BT has been prohibited from offering entertainment services through the year 2001, although this deadline could come under review

and be shortened to as early as 1998. Many believe that the possible advent of a Labor Party government at the next elections could curtail the BT moratorium for these sorts of services.

The current thinking is that BT does not require a special license to offer VOD under Part 2 of the 1990 Broadcasting Act because this service does not constitute broadcasting. This means that, for the time being, BT is allowed to act as a distributor of VOD, although it cannot offer any programming of its own via such a service.

Not only is BT's legal position unclear, but there are also doubts as to whether its copper wire network is up to the required standard for carrying signals. BT has denied that this network will be unable to cope. Many (including Kleinwort Benson Securities) consider BT's VOD service plan to be aimed at raising doubts among potential investors about the viability of the industry. The Cable Television Association sees BT's VOD activity as "a desperate, but ultimately doomed attempt to halt or slow the growth of cable."

Although cable operators do not welcome BT's VOD initiative, their general view is that BT is really no threat to the industry since it will not be able to deliver a VOD mass market in the foreseeable future, either technically or legally. Through the introduction of NVOD services, cable operators are positioning themselves to migrate to VOD but there is still the nagging problem of software.

VOD on trial

Despite general skepticism concerning its efforts, BT has been stalwartly plugging ahead with VOD trials that may benefit everyone in the industry. At present, BT is running trials in Martlesham in Surrey among 70 of its employees. The BBC, Carlton Communications, EMI Records, Granada TV, LWT and Thames TV are helping BT by providing programming material. If these trials prove successful, there is talk of planning a national rollout for the VOD service by next summer.

Although the VOD trials have a high profile, there are more PPV trials in progress currently. Nynex has vowed to launch its first U.K. PPV channel in Manchester by 1995. Usually companies test PPV and NVOD before progressing to VOD trials, but BT has chosen a different course.

Given BT's announcement that it would reposition the VOD service not to compete head-on with video rental shops, it appears that the Manchester trial has not been an unqualified success. BT claims that competing with video shops and satellite and cable TV is not the aim of VOD. The exaggerated prominence of the dial-a-video service has been the fault of a media grasping for the simplest description of what the technology can do for the customer, claims BT.

"The research we have done has shown that the movies- and TV-on-demand would be intimately part of, but not the only important thing" provided by the VOD technology, a BT spokesperson stated officially. A larger trial scheduled for the end of this year will move beyond films and TV programs to services that are more truly interactive, such as home shopping and educational programming.

BT can be said to be putting its money where its mouth is on this issue. The Martlesham trial includes an advanced prototype of a "virtual" shopping mall. Industry wags have made insinuations that BT's shift from movies to other uses of the technology may have more to do with its inability to gain software rights, i.e., rights to the movies or programs shown on VOD.

Apart from the U.K., there have been, and continue to be, VOD trials in the U.S., Norway, Japan, Germany, Israel, Hong Kong and Bermuda.

Results from the U.S. trials are not altogether encouraging, except in the case of Time Warner, as the programming software issue appears to be a universal problem. Time Warner has access to film libraries of its own, and its "films-to-order" service has been well-received. Based in Queens, New York, the trial used



SHEDDING NEW LIGHT ON CATV...

Backed by group resources worldwide, Nokia offers the total telecommunications solution for the CATV industry. Our unrivalled customer support in network management, operation and maintenance generates total commitment to the telephone operator.

Connecting advanced digital technology with a thorough understanding of operator and end-user needs, Nokia Telecommunications creates solutions which turn communications into tools of profitability.

FOR FURTHER INFORMATION,
CALL 0480 434444

NOKIA 
CONNECTING PEOPLE

NOKIA TELECOMMUNICATIONS LTD., LANCASTER HOUSE, LANCASTER WAY, ERMINE BUSINESS PARK,
HUNTINGDON, CAMBS PE18 6XU, U.K.
TELEPHONE +480 434444 FAX +480 435111

cable rather than telephony. Market research has shown that the product is very price-sensitive since only two-thirds of U.S. households are likely to pay \$10 per month for enhanced services like VOD, while only one-third would pay \$20 or more per month for such services.

Available VOD services

Initially VOD was being hawked as the cutting edge of interactivity. The "on-demand" philosophy can be extended to almost anything the customer wants: magazines, newspapers, public information, home shopping, banking, real estate and travel. For this reason, some argue that VOD will eventually dominate all kinds of TV-on-demand. This kind of thinking has put VOD trials at the center of development of interactive services.

There are other services on offer today. For example, Videotron's Videoway system allows the viewer to choose camera angles and action replays for certain events, as well as cooking programs that allow the viewer to stop and start them at will to be able to keep up with the chef.

Videotron also has added an interactive feature to Carlton and LWT's London news network. This experiment will operate during the transmission of *London Tonight*. In addition to watching a live broadcast of the news program, subscribers to Videotron will have access to three additional local broadcast channels simultaneously. One will have weather and travel information, another repeats stories the viewer may have missed, and the third channel will carry social action programs.

These services are really NVOD, as opposed to VOD. Videotron operates on a simple selection basis, so the effect is like having four channels instead of one.

As an add-on to an existing cable service, it is offered perhaps less as a step toward the wild technological frontier than out of commercial pragmatism. Videotron has discovered that customers with interactive services tend to "churn" (give up their services) less.

The rights issue

With all the hype about VOD, the question of programming software, as technical experts refer to TV programming, has been the subject of

"Before the age of interactivity is upon us, there are still several hurdles to be jumped, and they are not merely technical ones."

far less analysis than the technology. There seems to be a tacit understanding that programming will be there, but in the apparent absence of a product locomotive and/or possible early viewing possibility, the future of VOD programming currently appears to be in existing video libraries.

If new VOD-specific programming does not develop, then the technology will continue to drive the marketing of VOD, as the "on-demand" feature will have a more unique quality than the scope of programming and the early viewing opportunities.

The scope and early viewing issues are inseparable when it comes to movies. As far as filmmakers are concerned, VOD is seen as a competitor to the relatively new but well-established video retail rental and sell-through business. Hollywood studios have benefited handsomely from these markets, which is why their attitude toward VOD remains unclear.

To appreciate where video rights for movies might slot into the customary sequence of exploitation, one first needs to examine that sequence:

- 1) Initial theatrical release.
- 2) Twelve to 18 months later, video release (for rental only).
- 3) Six to nine months later, pay TV and video sell-through.
- 4) Nine to 18 months later, free TV.

There are variations to this general rule. For instance, films may be exhibited on pay TV ahead of video rental, but this is normally only where the exhibiting TV station has a vested interest in the production and has therefore had an involvement in the creation of the product as well as the method of distribution. The best examples of this are HBO and Showtime in the U.S.

There are other instances of films that are made for TV or video release without an initial, or even limited, theatrical release, but these are always

considered poor relations to films that had their first airing in a cinema.

The most likely home for VOD rights would seem to be somewhere in the pay TV and video sell-through window. As to how license fees will be assessed in the early days, it is hard to imagine that these would be linked to the number of viewer demands. The risk of low take-up reflected in low license fees will make the medium even less attractive to those reluctant to place existing and considerably more substantial revenue streams at risk. Ultimately it is likely that VOD operators will ask for minimum guarantees against demands.

Video in the U.K. has come to terms with the more recent phenomenon of pay TV, which has not interfered with the rental market, but is competing for release times with sell-through. If VOD services go head to head with rental on release timing, the video industry is likely to raise a hue and cry.

The problem will sort itself out according to the needs of the rights holders — the Hollywood studios, which have shown themselves reluctant to cannibalize the home video market in the case of PPV. In the U.K., cable operators' attempts to launch PPV in London faltered because of lack of product.

While News International's proclaimed interest in VOD is taken in some circles to mean that the pay TV rights licensed to BSkyB for its movie channels may be available for VOD exploitation, Hollywood studios have made it clear that pay TV rights do not equal PPV rights. It follows that VOD rights will not be held to be the same as PPV rights.

However VOD eventually fits into the standard film release schedule, the answer to the question of how to lay hands on programming to be delivered with this technology will be seminal to sparking consumer interest.

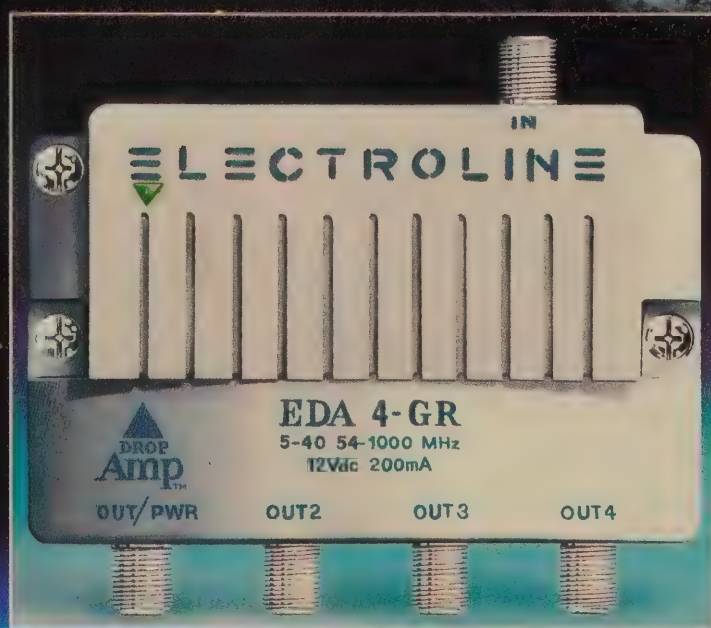
Partnership opportunities

The partnerships between applications developers and cable companies to provide interactive services are in their infancy, and the opportunities are largely U.S.-driven.

Some see the future as perhaps holding the creation of two or more digital highways in the U.S. One is likely to be controlled by the cable

ELECTROLINE

Unparalleled.



- 3 dB Noise Figure
- 1 GHz Bandwidth
- 15 dB Gain
- Available in one, two, four and eight outputs

DROPAmp. Unparalleled.

Équipement Electroline Equipment Inc.
8265, boul. St-Michel, Montréal, Québec, Canada H1Z 3E4
Téléphone : (514) 374-6335 Fax: (514) 374-9370 Téléphone : 1-800-461-3344
France : (Agent) 67.92.08.92
Reader Service Number 89

25 YEARS OF EXPERIENCE

In CATV/SMATV allows us to offer our customers full service in the following fields:



- Headends for all standards
- CATV databank distribution
- Fiber optic networks
- Satellite communication

Phasecom stands by their clients through all stages of a turn-key project: from customer design and installation to on-going maintenance-worldwide.



P.O.Box 45017 Jerusalem 91450, Israel. Tel. 972-2-889888, Fax. 972-2-889889

and satellite industries while the other is run by the regional telephone companies. The U.S. and Canada will lead the way down this bifurcated development path with the U.K. and the rest of Europe following much later, if at all.

In the meantime, computer companies are doing their best not to be left out in the cold where the development of VOD technology is concerned.

In the U.S., Microsoft's Bill Gates stated his belief that the PC industry also will be a key player in the development of a national and international information infrastructure. Gates claimed he already has advanced plans for Microsoft's role in that infrastructure.

Perhaps Gates' vision is born out in Rogers Communications' recently announced plans for consumer trials of a new home video delivery technology developed in the U.S. by Microsoft.

The Microsoft/TCI venture (code name Tiger) marks the first of many publicized moves into a fast-growing VOD business. Tiger is based in Microsoft's existing NT advanced server software and will be tested in Seattle, Washington, U.S.A., by employees of both Microsoft and U.S. cable TV giant TCI as part of a pilot project later this year.

Leveraging off of Microsoft's innovation, U.S. computer hardware manufacturer Compaq and U.S. chip maker Intel also have demonstrated the first continuous media server hardware based on this Tiger technology.

The product should provide a lower cost way of delivering VOD by using standard personal computers and asynchronous mode transfer (ATM) switches as part of the delivery mechanism, bringing down the cost of entry into this pioneering market.

Not to be outdone by the competition, Oracle, the world's third largest computer software company, claims to be able to deliver multimedia information along standard copper telephone wires for £50 (US\$77) a year, a fraction of the cost previously anticipated.

At the time it struck its deal with Bell Atlantic, Oracle predicted that Hollywood studios would begin digitizing their libraries in anticipation of VOD.

BT currently employs the Oracle media server software at Martlesham. The Oracle computers are compatible with massively parallel processing (MPP) computers. This would enable BT to keep only one copy of everything, which could be viewed and controlled simultaneously by thousands of viewers, a project known as Stream Server.

BT has announced that when its Martlesham trials are over, a decision will be made as to whether to spend the billions of pounds necessary to install a new fiber-optic network. If Oracle's cheap copper delivery can compete, BT might pull off a real cost savings.

Nynex Cable Communications, one of the biggest cable communications operators, may beat BT at its own game, introducing VOD services under telephone lines before BT itself. Nynex has announced contracts worth more than £200 million (US\$308 million) to cover the expansion of telecommunications services.

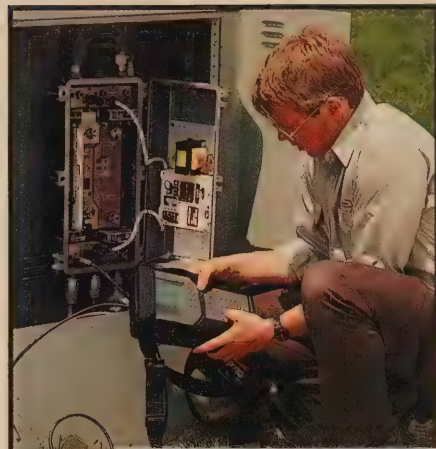
Contracts with Nokia Communications and General Instrument will enable Nynex to install 100,000 telephone lines in the U.K. under cable franchises it holds in the northwest. Nokia will provide the switching technology and network services, and General Instrument will supply decoders for the network covering 1.5 million homes.

Nynex also is planning to launch U.K. cable's first PPV service in the Greater Manchester area this autumn, which it claims will become a national network by the end of 1995. Although the service is in fact NVOD, Nynex feels that VOD is further down the line and depends on the results of trials of NVOD.

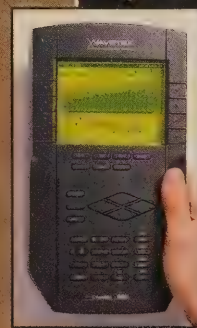
The type and extent of other partnerships will depend on the focus of initial usage. First, marketing questions must be answered, like whether emphasis should be on single services, such as VOD, or a broad range of services, as well as whether marketing should focus on the domestic or business customer.

Pinpointing consumer demand is crucial at this stage, because consumers are confused over a proliferation of highly technical products for which they are not sure of the uses. **IC**

Margaret Popper is editor of "European Media Business & Finance," a Phillips Business Information publication.



"My Stealth SAM lets me test the system fast and accurately."



There's no shortcut on features and it's easy to use."

STEALTH SAM

This signal analysis meter is...

- Full-featured... broad scope of measurements; signal levels, hum, and C/N
- Built-in spectrum analyzer mode and Sweepless Sweep™
- Automated interval testing capability
- Rugged/weather resistant
- Fully upgradeable to Stealth Sweep
- Easy viewing...convenient LCD display
- Handheld

Worldwide Sales Offices

Asia Pacific	(852) 788 6221
China	(861) 500 2255
Southeast Asia	(65) 754 5520
Europe	(49/89) 9609490
United Kingdom	(44/1603) 404824
United States	(317) 788-9351

WAVETEK

Reader Service Number 00

Structural hearing results

By James Careless

Canadian cable companies can now offer local telephone service, but domestic telephone carriers can't get into the cable TV market — yet.

That's the gist of Canada's revised Telecommunications regulations, as announced September 16, 1994, by the Canadian Radio-television and Telecommunications Commission (CRTC).

The changes come after a marathon hearing held by the CRTC last

March, one where Stentor — the alliance of Canada's nine telephone companies — lobbied hard to open up both telephone and video distribution to competition. Under the new rules, cable companies will now be allowed to compete with the telcos in providing local telephone coverage, overturning a longstanding tradition of telco exclusivity in this area.

So far, one major Canadian cable company, Videotron (currently Canada's second largest MSO with 1.2 million subs in Quebec), has announced its intention to take

advantage of this new market. As it turns out, Groupe Videotron, Videotron's parent company, has two distinct advantages in taking up this challenge.

First, the company is already boosting the carriage capacity of its intercity fiber-optic network in order to support UBI (universal bidirectional interactive) two-way broadband services. Second, it has experience in competing with the telcos, thanks to its U.K. subsidiary, Videotron Holdings Plc, which is up against British Telecom in London. →

Rogers/Maclean Hunter deal in air

Canadian hearings into the \$C3.1 billion buyout of Maclean Hunter Ltd. by Rogers Communications Inc. — owner of Rogers Cablesystems, already Canada's largest MSO — have wrapped up with no clear indication as to the fate of the deal.

During the week-long session in Hull, Quebec, the CRTC poked and prodded at the deal, which would see Rogers acquire 26 cable systems, plus some of Canada's most popular magazines, the *Sun* newspaper chain and four radio stations.

The greatest heat was saved for Rogers President Ted Rogers. During long, sometimes pointed questioning, CRTC Chairman Keith Spicer challenged Rogers' assertion that the deal would result in "improved services, or lower rates, or both over the next five or 10 years," due to economies of scale for a merged RCI-MH cable system.

After forcing Rogers to admit that the merger simply offered lower rate increases for consumers, not rate reductions, Spicer returned to Rogers' economies of scale, asking point-blank, "Would you like to commit today that you will give back to subscribers at least half of these savings?" In response, an obviously caught off-guard Rogers replied, "Uh, no. The answer is no."

Spicer wasn't the only one questioning the deal. Stentor Telecom Policy also expressed fears about it

during the CRTC hearings. Stentor President and CEO Jocelyne Cote-O'Hara gave her support in principle, but then told the commissioners that conditions should be attached to any approval "to ensure that cable revenues are not to support nonbroadcasting competitive services." In other words, broadband information highway services, a market in which the telcos and Rogers are rivals.

As well, in an effort to turn the financial screws on Rogers a bit tighter, Cote-O'Hara asked the commission to extend the existing price cap on basic service to cover the discretionary extended basic tier, which reaches 91% of all cable households. She also wants Rogers to be compelled to install open architecture technology in its broadband network, and "be required to allow network access for all third-party services," so that the telcos won't be shut out of Rogers' territory, which will cover 31% of Canada's 7 million-plus cable subscribers, if the deal goes through.

Other intervenors against the deal more or less took the same approach, asking the CRTC to place this or that condition on any approval, whether in broadband services, print or broadcasting. But one voice of support did come from Shaw Communications, which controls 12% of the Canadian cable

market. Speaking at the hearings, Shaw President Jim Shaw agreed with Ted Rogers by saying that the merger would hold rates down.

However, given that Rogers has signed a deal with Shaw that — if approval goes through — would see the companies swapping a number of cable systems, thus bringing Shaw's market share up to 14%, it's hard to know just how much weight the commission will give this support. (Rogers does have a lot of other industry players onside, including the CCTA and major broadcasting companies like Baton and CHUM.)

The bottom line? In considering the Rogers-Maclean Hunter merger, the commission is faced with a serious conundrum. If it approves the deal — and few, if any, believe that it won't — the CRTC will have to likely bind it with enough regulatory ties to placate competitors such as Stentor, ties that could hamper Rogers' efforts to take on the telcos in the emerging broadband services market. If, on the other hand, the commission did actually turn down the deal, it would bring chaos to the Canadian cable industry at a time when it is gearing up for competition not just from the telcos, but DBS as well.

The CRTC's decision on the Rogers-Maclean Hunter deal is expected within a few months. While the commissioners ponder, much of the industry is holding its breath. — JC

basic for cable

The converging interests of television and media are shaping one-time competitors into business partners and changing the way we do business.

Now more than ever NATPE's Annual Program Conference & Exhibition is the one show that puts all TV programming into focus.

Whatever your niche... cable network, MSO, cable programmer, off-cable syndication... NATPE '95 will play an important role for you.

Become part of the convention that draws the largest diversity of key television industry players from around the world. NATPE '95 will be programming's biggest show.

What could be more basic than that?

1 9 9 5
Natpe

Sands Expo Center, Las Vegas
January 23-26
Paving the Way for Innovative Ideas

United Kingdom
Pacific Rim

44.71.494.3633
61.75.886666

Pam Mackenzie
Nick McMahon

NATPE Headquarters (U.S.) 310.453.4440

However, it's this very experience that also is causing Videotron to put a hold on its plans, says Videotron Communications Officer Sylvain Leclerc, pending the establishment of ground rules for competition. There's a need for "a referee between the phone and cable companies," he explains, in order to avoid the sort of situation that Videotron initially faced in London.

Says Leclerc, "Every time we signed up a business customer with Videotron instead of British Telecom, that customer would call BT and say 'Okay, I'm going to go with Videotron now.' And British Telecom would tell them, 'Okay, that's your choice, but you'll have to change your phone number.'"

BT's tactics didn't make it any money, says Leclerc, but it did keep some of its customers from switching to Videotron ... until the British regulator put a stop to it.

Mindful of this experience — and of the financial clout of Canada's telcos, whose \$C13.8 billion income is about 10 times that of cable's — Leclerc says his company will sit back and wait until the CRTC says

how it's going to regulate this marketplace.

As for other cable companies? Well, they're likely to hold back as well, says Ken Stein, president and CEO of the Canadian Cable Television Association (CCTA), due to concerns about setting up networks.

"Right now telephone companies won't let us put fiber on poles that are paid for by the public," says Stein. He adds that until the CRTC rules on "access" problems such as these, "we're not going to say anything" about the industry's plans to compete in telephony.

If cable didn't get everything it wanted in local telephony competition, neither did the telcos when it came to opening up the video distribution market.

That's because last March's hearing "did not consider whether telephone companies can hold licenses," says a CRTC news release, since this area of policy is covered under Canada's Broadcasting Act, which was not under review at the time. (However, it is expected that the commission will look at the question of open competition in the near future.)

Still, the news wasn't all bad for the telcos.

For instance, short of providing cable-style packages of services, "The telephone companies can (now) distribute the services of broadcasters or other types of video services," says CRTC Director of Public Affairs Bill Allen.

What this translates into are services distributed "on an on-demand, individual basis — i.e. subscription," says Liz Ostiguy, national director of government and external relations for Stentor Telecom Policy, as opposed to point-multipoint services, which are still cable's exclusive domain. Such services might include dedicated newsfeeds, she says, or downloads of information videos to home users from institutions such as banks.

As well, the telcos also have received dispensation from the CRTC to continue video-on-demand trials, which many are testing in prototype broadband "information highway" trials. So while the actual question of telco access to cable's turf remains unresolved, the industry has been given permission to develop its competitive approach in the meantime.

This fact isn't lost on CCTA's Stein: "The commission has taken a large leap into trying to advance the competitive world."

In short, Stein sees cable-telco competition in video distribution as inevitable. That's why, like Leclerc, he's calling for the CRTC to put into place new rules "to ensure fair and equitable competition."

"There's just no point allowing the telephone companies to unleash their resources across the country and wipe everybody out," says Stein. "That's not going to give you competition."

The bottom line is that the CRTC's revised telecommunications regulations seem to have opened as many questions as they've answered, at least as far as cable is concerned.

Until more details are worked out — such as the ground rules for telephone competition, and a decision whether or not to allow the telcos into broadcasting — those questions will remain, and continue to hamper, the Canadian cable industry's attempts to map out its future.

— *James Careless*

MAKING THE PIECES FIT

**CARIBBEAN CABLE TV ASSOCIATION
1995 ANNUAL MEMBERSHIP MEETING
CASA DE CAMPO
LA ROMANA, DOMINICAN REPUBLIC
JANUARY 11 - 14, 1995**

For more information contact:

MARGARET DEAN, CCTA, P.O. BOX 1676, ST. THOMAS, VI 00804 • 809-776-3320

INTERNATIONAL CABLE

Return this card for Free Information • Free Subscription

December 1994 HM1

Mail or Fax today
to 413-637-4343

The information at right must be completed to process your request.

☐ Yes, I wish to receive/continue to receive *International Cable*. ☐ No

Name _____

Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Phone _____ Fax _____

Signature _____ Date _____

(Signature and date required by U.S. Postal Service)

Circle Numbers for Free Information

1	27	53	79	105	131	157	183	209	235	261	287
2	28	54	80	106	132	158	184	210	236	262	288
3	29	55	81	107	133	159	185	211	237	263	289
4	30	56	82	108	134	160	186	212	238	264	290
5	31	57	83	109	135	161	187	213	239	265	291
6	32	58	84	110	136	162	188	214	240	266	292
7	33	59	85	111	137	163	189	215	241	267	293
8	34	60	86	112	138	164	190	216	242	268	294
9	35	61	87	113	139	165	191	217	243	269	295
10	36	62	88	114	140	166	192	218	244	270	296
11	37	63	89	115	141	167	193	219	245	271	297
12	38	64	90	116	142	168	194	220	246	272	298
13	39	65	91	117	143	169	195	221	247	273	299
14	40	66	92	118	144	170	196	222	248	274	300
15	41	67	93	119	145	171	197	223	249	275	301
16	42	68	94	120	146	172	198	224	250	276	302
17	43	69	95	121	147	173	199	225	251	277	303
18	44	70	96	122	148	174	200	226	252	278	304
19	45	71	97	123	149	175	201	227	253	279	305
20	46	72	98	124	150	176	202	228	254	280	306
21	47	73	99	125	151	177	203	229	255	281	307
22	48	74	100	126	152	178	204	230	256	282	308
23	49	75	101	127	153	179	205	231	257	283	309
24	50	76	102	128	154	180	206	232	258	284	310
25	51	77	103	129	155	181	207	233	259	285	311
26	52	78	104	130	156	182	208	234	260	286	312

A. Are you a member of the
SCTE (Society of Cable
Television Engineers)?

01. yes
02. no

B. Please check the category
that best describes
your firm's primary
business (check only 1):

- Cable TV Systems Operations
03. Independent Cable TV Syst.
04. MSO (two or more Cable
TV Systems)
05. Cable TV Contractor
06. Cable TV Program Network
07. SMATV or DBS Operator
08. MDS, STV or LPTV Operator
09. Microwave or Telephone Comp.
10. Commercial TV Broadcaster
11. Cable TV Component
Manufacturer
12. Cable TV Investor
13. Financial Institution, Broker,
Consultant
14. Law Firm or Govt. Agency
15. Program Producer or Distributor
16. Advertising Agency
17. Educational TV Station, School,
or Library
18. Other (please specify) _____

C. Please check the
category that best
describes your job title:

19. Corporate Management
20. Management
21. Programming
Technical/Engineering
22. Vice President
23. Director
24. Manager
25. Engineer
26. Technician
27. Installer
28. Sales/Marketing
29. Other (please specify) _____

D. In the next 12 months,
what cable equipment
do you plan to buy?

30. Amplifiers
31. Antennas

32. CATV Passive Equipment
including Coaxial Cable
33. Cable Tools
34. CAD Software, Mapping
35. Commercial Insertion/
Character Generator
36. Compression/Digital Equip.
37. Computer Equipment
38. Connectors/Splitters
39. Fleet Management
40. Headend Equipment
41. Interactive Software
42. Lightning Protection
43. Vaults/Pedestals
44. MMDS Transmission Equipment
45. Microwave Equipment
46. Receivers and Modulators
47. Safety Equipment
48. Satellite Equipment
49. Subscriber/Addressable
Security Equipment/
Converters/Remotes
50. Telephone/PCS Equipment
51. Power Suppls. (Batteries, etc.)
52. Video Servers

E. What is your annual cable
equipment expenditure?

53. up to \$50,000
54. \$50,001 to \$100,000
55. \$100,001 to \$250,000
56. over \$250,000

F. In the next 12 months,
what fiber-optic equip-
ment do you plan to buy?

57. Fiber-Optic Amplifiers
58. Fiber-Optic Connectors
59. Fiber-Optic Couplers/Splitters
60. Fiber-Optic Splicers
61. Fiber-Optic Transmitter/Receiver
62. Fiber-Optic Patchcords/ Pigtails
63. Fiber-Optic Components
64. Fiber-Optic Cable
65. Fiber-Optic Closures & Cabinets

G. What is your annual
fiber-optic equipment
expenditure?

66. up to \$50,000
67. \$50,001 to \$100,000
68. \$100,001 to \$250,000
69. over \$250,000

H. In the next 12 months,
what cable test &
measurement equipment
do you plan to buy?

70. Audio Test Equipment
71. Cable Fault Locators
72. Fiber Optics Test Equipment
73. Leakage Detection
74. OTDRs
75. Power Meters
76. Signal Level Meters
77. Spectrum Analyzers
78. Status Monitoring
79. System Bench Sweep
80. TDRs
81. Video Test Equipment

I. What is your annual cable
test & measurement
equipment expenditure?

82. up to \$50,000
83. \$50,001 to \$100,000
84. \$100,001 to \$250,000
85. over \$250,000

J. In the next 12 months,
what cable services do
you plan to buy?

86. Consulting/Brokerage Services
87. Contracting Services
(Construction/Installation)
88. Repair Services
89. Technical Services/ Eng. Design
90. Training Services

K. What is your annual cable
services expenditure?

91. up to \$50,000
92. \$50,001 to \$100,000
93. \$100,001 to \$250,000
94. over \$250,000

L. Do you plan to rebuild/
upgrade your system in:

95. 1 year
96. more than 2 years

M. How many miles of plant
are you upgrading/
rebuilding?

97. up to 10 miles
98. 11-30 miles
99. 31 miles or more

INTERNATIONAL CABLE

Return this card for Free Information • Free Subscription

December 1994 HM2

Mail or Fax today
to 413-637-4343

The information at right must be completed to process your request.

☐ Yes, I wish to receive/continue to receive *International Cable*. ☐ No

Name _____

Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Phone _____ Fax _____

Signature _____ Date _____

(Signature and date required by U.S. Postal Service)

Circle Numbers for Free Information

1	27	53	79	105	131	157	183	209	235	261	287
2	28	54	80	106	132	158	184	210	236	262	288
3	29	55	81	107	133	159	185	211	237	263	289
4	30	56	82	108	134	160	186	212	238	264	290
5	31	57	83	109	135	161	187	213	239	265	291
6	32	58	84	110	136	162	188	214	240	266	292
7	33	59	85	111	137	163	189	215	241	267	293
8	34	60	86	112	138	164	190	216	242	268	294
9	35	61	87	113	139	165	191	217	243	269	295
10	36	62	88	114	140	166	192	218	244	270	296
11	37	63	89	115	141	167	193	219	245	271	297
12	38	64	90	116	142	168	194	220	246	272	298
13	39	65	91	117	143	169	195	221	247	273	299
14	40	66	92	118	144	170	196	222	248	274	300
15	41	67	93	119	145	171	197	223	249	275	301
16	42	68	94	120	146	172	198	224	250	276	302
17	43	69	95	121	147	173	199	225	251	277	303
18	44	70	96	122	148	174	200	226	252	278	304
19	45	71	97	123	149	175	201	227	253	279	305
20	46	72	98	124	150	176	202	228	254	280	306
21	47	73	99	125	151	177	203	229	255	281	307
22	48	74	100	126	152	178	204	230	256	282	308
23	49	75	101	127	153	179	205	231	257	283	309
24	50	76	102	128	154	180	206	232	258	284	310
25	51	77	103	129	155	181	207	233	259	285	311
26	52	78	104	130	156	182	208	234	260	286	312

A. Are you a member of the
SCTE (Society of Cable
Television Engineers)?

01. yes
02. no

B. Please check the category
that best describes
your firm's primary
business (check only 1):

- Cable TV Systems Operations
03. Independent Cable TV Syst.
04. MSO (two or more Cable
TV Systems)
05. Cable TV Contractor
06. Cable TV Program Network
07. SMATV or DBS Operator
08. MDS, STV or LPTV Operator
09. Microwave or Telephone Comp.
10. Commercial TV Broadcaster
11. Cable TV Component
Manufacturer
12. Cable TV Investor
13. Financial Institution, Broker,
Consultant
14. Law Firm or Govt. Agency
15. Program Producer or Distributor
16. Advertising Agency
17. Educational TV Station, School,
or Library
18. Other (please specify) _____

C. Please check the
category that best
describes your job title:

19. Corporate Management
20. Management
21. Programming
Technical/Engineering
22. Vice President
23. Director
24. Manager
25. Engineer
26. Technician
27. Installer
28. Sales/Marketing
29. Other (please specify) _____

D. In the next 12 months,
what cable equipment
do you plan to buy?

30. Amplifiers
31. Antennas

32. CATV Passive Equipment
including Coaxial Cable
33. Cable Tools
34. CAD Software, Mapping
35. Commercial Insertion/
Character Generator
36. Compression/Digital Equip.
37. Computer Equipment
38. Connectors/Splitters
39. Fleet Management
40. Headend Equipment
41. Interactive Software
42. Lightning Protection
43. Vaults/Pedestals
44. MMDS Transmission Equipment
45. Microwave Equipment
46. Receivers and Modulators
47. Safety Equipment
48. Satellite Equipment
49. Subscriber/Addressable
Security Equipment/
Converters/Remotes
50. Telephone/PCS Equipment
51. Power Suppls. (Batteries, etc.)
52. Video Servers

E. What is your annual cable
equipment expenditure?

53. up to \$50,000
54. \$50,001 to \$100,000
55. \$100,001 to \$250,000
56. over \$250,000

F. In the next 12 months,
what fiber-optic equip-
ment do you plan to buy?

57. Fiber-Optic Amplifiers
58. Fiber-Optic Connectors
59. Fiber-Optic Couplers/Splitters
60. Fiber-Optic Splicers
61. Fiber-Optic Transmitter/Receiver
62. Fiber-Optic Patchcords/ Pigtails
63. Fiber-Optic Components
64. Fiber-Optic Cable
65. Fiber-Optic Closures & Cabinets

G. What is your annual
fiber-optic equipment
expenditure?

66. up to \$50,000
67. \$50,001 to \$100,000
68. \$100,001 to \$250,000
69. over \$250,000

H. In the next 12 months,
what cable test &
measurement equipment
do you plan to buy?

70. Audio Test Equipment
71. Cable Fault Locators
72. Fiber Optics Test Equipment
73. Leakage Detection
74. OTDRs
75. Power Meter
76. Signal Level Meters
77. Spectrum Analyzers
78. Status Monitoring
79. System Bench Sweep
80. TDRs
81. Video Test Equipment

I. What is your annual cable
test & measurement
equipment expenditure?

82. up to \$50,000
83. \$50,001 to \$100,000
84. \$100,001 to \$250,000
85. over \$250,000

J. In the next 12 months,
what cable services do
you plan to buy?

86. Consulting/Brokerage Services
87. Contracting Services
(Construction/Installation)
88. Repair Services
89. Technical Services/ Eng. Design
90. Training Services

K. What is your annual cable
services expenditure?

91. up to \$50,000
92. \$50,001 to \$100,000
93. \$100,001 to \$250,000
94. over \$250,000

L. Do you plan to rebuild/
upgrade your system in:

95. 1 year
96. more than 2 years

M. How many miles of plant
are you upgrading/
rebuilding?

97. up to 10 miles
98. 11-30 miles
99. 31 miles or more

AFFIX
STAMP
HERE

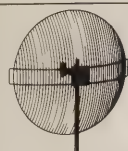
INTERNATIONAL CABLE

**Reader Service Management Department
P.O. Box 5360
Pittsfield, MA 01203-9788
U.S.A.**

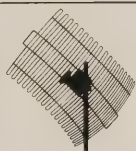
AFFIX
STAMP
HERE

INTERNATIONAL CABLE

**Reader Service Management Department
P.O. Box 5360
Pittsfield, MA 01203-9788
U.S.A.**



Dish Parabolics
MODEL 36, 48, 72



Section Parabolics
MODEL 24, 21, 18



Now... Integrated
Downconverter
available for all
antenna models.

NUMBER 1 IN MDS • MMDs • ITFS • OFS • WORLD WIDE
LARGEST SELECTION • OVER 10 YEARS OF PROVEN QUALITY

CALL: Joe Barris, V.P. (818) 367-1811 • FAX (818) 362-3594

13001 Bradley Avenue, Sylmar, California 91342
4440 North Clark Street, Chicago, Illinois 60640

Commercial Spun Aluminum Antennas

AZ/EL, POLAR, HORIZON & DUAL AXIS MOUNTS

CALL FOR PRICING
(800) 627-9443

DH Satellite

600 N. Marquette Rd.
Prairie du Chien, WI • USA • 53821

Phone (608) 326-8406

Fax (608) 326-4233



SIZES

3 meter 10'
3.3 meter 11'
3.7 meter 12'
3.9 meter 13'
4.2 meter 14'
4.5 meter 14'8"
5 meter 16'

MTN PRODUCTIONS WORLDWIDE REACH

• Satellite Time

- Transportable Ku-Band Uplinks and Flyaway Units
- Mobile Video Production Packages
- Studio Facilities and Edit Suites
- Videoconferencing
- 119 Locations in 102 Countries

Contact: David Sheehan at (212) 362-7013

1995 Broadway NY, NY 10023 Tel: (212) 362-4440 Fax: (212) 496-1269

Quality Cable & Electronics Inc.

1950 N.W. 44TH Street Pompano Beach, Florida 33064



QUALITY
& ELECTRONICS INC.
CABLE

CONVERTERS
HEADENDS
DROP MATERIAL
LINE EQUIPMENT

New / Used

All Equipment / Competitive Prices
Phone: 305-978-8845 Fax: 305-978-8831

Call or Fax us today with your request!

Credit terms available upon approval

AXSYS

COMUNICACIONES DE ARGENTINA S.A.

Sistemas De Fibra Optica

Diseño • Instalacion • Prueba Y Control • Servicios "Llave En Mano"

Usos:

Telefonia • Video Cable • Redes Locales • Sistemas Industriales • Seguridad

Servicios:

Ingenieria de Sistemas • Construcción de Plantas Externas • Direccion de Proyectos
Instalaciones Aéreas y Subterráneas • Sistemas Integrados • Cableado en Edificios
Appliques • Terminaciones • Pruebas • Activacion • Entrenamiento • Servicio de Emergencia

Planes 1057 • (1405) Buenos Aires • ARGENTINA
(541) 582-2915 • Fax (541) 582-1372

AXSYS

COMMUNICATIONS, INC.

Fiber Optic Systems

Design • Installation Testing • Turn-key Services

Applications Include:

Telephone • Cable TV • 802 Networks • Process Control • Security

Services Include:

System Engineering & Design • Outside Plant Construction • Project Management
Aerial & Underground Cable Installation • Systems Integration • Premises Wiring
Splicing • Termination • Testing • Activation • Training • Emergency Service

P.O. Box 571 • Danielson, CT 06239-0571 • USA
(203) 774-4102 • Fax (203) 774-4783

EXPORT SPECIALISTS

Jerrold DRZ-A	- \$ 12	I	Standard 24 PC	- \$225
Mag. 5-330 Trunk	- \$299	N	SA 330 Trunk	- \$199
Jerrold SJ Trunk 301	- \$199		Syl/Tex 2000 Trunk	- \$199
Jerrold SJ Trunk 400	- \$299	S	Jerrold JLE-400	- \$ 85
Magnavox 5LE330	- \$ 85	T	Jerrold SJ 450 Trunk	- \$435
SA Slimline 450 Trunk	- \$435	O	Jerrold SLE/SLR	- \$ 19
SA 8525 w/ Remote	- \$ 25	C	Hamiln CRX	- \$ 12
Pioneer BC-2002/2	- \$1.99	K	Tocom 5503-A	- \$ 40
Assorted Taps	- \$1.50		C-Cor 450 LE NEW	- \$175

MINIMUM QUANTITIES APPLY - CALL FOR COMPLETE INVENTORY LIST

ARENA

SERVICES, INC.

Pennsylvania --- Florida

USA (610) 279-8000 • 800-WT ARENA

FAX: (610) 279-5805

All Reconditioning Done On Premises

WE SERVICE WHAT WE SELL! SINCE 1982

TEST EQUIPMENT

Reconditioned Wavetek, HP, Tektronix and more. Signal Level Meters, Sweep Systems, TDR's, Power Meters, Spectrum Analyzers, Frequency Counters and Fiber Test Equipment. Guaranteed to meet/exceed manufacturers specs. 90 day warranty standard.

SATELLITE ANTENNAS

Used Scientific Atlanta, Andrews, Vertex, RSI and others. 7 meter and up.

PTL Cable Services Inc. USA • Phone (407) 747-3647 • Fax (407) 575-4635
BUY-SELL-TRADE



JONES SURPLUS


WE BUY AND SELL QUALITY CATV EQUIPMENT

LINE AMPLIFIERS, TAPS, CONNECTORS
CONVERTERS - ALL TYPES AND MAKES
HEADEND EQUIPMENT

USA • (619) 757-3008 • Fax (619) 757-4048

Stocking **SCIENTIFIC ATLANTA & JERROLD** • Stocking

BROADBAND SYSTEMS and SUPPLIES



Klungness Electronic Supply
101 Merritt Avenue, P. O. Box 885
Iron Mountain, MI 49801 USA
800-338-9292 • 906-774-1755 • FAX 906-774-6117

JERROLD • Stocking SCIENTIFIC ATLANTA & JERROLD

Secure Business Communications

ITFS/MMDS PRODUCTS AND SERVICES
FCC APPLICATIONS/ANALYSIS
ENGINEERING • CONSULTING • SALES

International Inquiries
(909) 621-1004

THOMAS M. GLAB
MANAGER

P.O. Box 627
Claremont, CA 91711
FAX 714-624-2257
USA



CABLE COPS INC.

• CONSULTING • CONSTRUCTION • INSTALLATIONS
• AUDITS • DOOR TO DOOR CATV SALES



15 YEARS EXPERIENCE
15 TO 30% NON-SUB LIFTS


Serving

- TCI
- Paragon
- Comcast
- Cox

- A.T.C.
- United Cable
- Triax
- Century

- Continental Cablevision
- Cablevision Industries
- Storer Cable
- Cencom
- Prime Cable

6600 France Avenue South • Suite 660
Minneapolis, Minnesota 55435 • USA
(619) 925-0200 • FAX (612) 925-2705
Hablamos Español



Jumper Cables

CUSTOM MADE CABLE ASSEMBLIES INCLUDING:
F to F, N to N, BNC, RCA, F-81

Gilbert AHS LRC Off Shore Amphenol	RG-56 RG-59 RG-11 RG-213 RG-214	Belden Times Comm/Scope Intercomp
---	---	--

We will make any cable assembly. Quick delivery on all colors and lengths.
Fax: (602) 582-2915, PH: (602) 581-0331

335 W. Melinda Drive, Phoenix, AZ. 85027 USA

SPECIALISTS IN NEW/USED EQUIPMENT "WE BUY, SELL & REPAIR"

Converters: New, Remanufactured, and Repaired

Zenith • Jerrold • G.I. • S.A. • Panasonic • Oak • Pioneer • Hamlin

Line Gear: Remanufactured and Repaired

Texscan-T-Series, Pathmaker • Pathmaker+ • Magnavox/Philips • Jerrold/G.I. • S.A. • C-Cor

1. New S/A 450/550/750 Line Extenders and System Amplifier
2. New Texscan -T- Series - Pathmaker - Pathmaker +
3. Refurbished/New Magnavox Equipment
4. Refurbished Jerrold 450 L/E and Amplifiers at Most Competitive Prices
5. New Replacement Pads and Equalizers for Active Electronics
6. "The Corrector" Eliminates Picture Problems Caused by Positive Encoders.— GUARANTEED.

If you use pre-owned merchandise or need surplus new at reasonable prices in the CATV or SMATV market place ...

"WE ARE THE ONES"

MAIN LINE EQUIPMENT INC.

USA or Canada: **800-444-2288**
Local Phone: **310-715-6518**

Mexico: **95-554-6794**
Fax: **310-715-6695**

SubTRACKER®

CATV-SMATV-MMDS

BILLING SYSTEM

US-CDN-International Versions

Versión en Español



Low Cost: FROM US \$599

STATEMENTS, DATABASE

MANAGEMENT REPORTS

IBM PC COMPATIBLE

FAST AND RELIABLE

LAN & Multi-Town Capability

SubTRACKER

1-403-354-2510 or FAX 1-403-354-8780

FOR SALE:

Used, Surplus & New CATV Equipment

JERROLD Trunks SJ 330	(US)\$180.00
JERROLD Trunks SJ 400	270.00
JERROLD Trunks SJ 450	370.00
JERROLD L.E. SLE/SLR 301	19.00
S.A. Slimline Trunk 450	400.00
S.A. 330 Trunk	180.00
DRZ-3 Converters	16.00
Assorted Taps	0.70
NEW Taps	6.50

Minimum Quantities Apply

GALOW CABLE CO.

Servicing Latin America for over 5 Years

Hablamos Español

U.S. Tel: (305) 593-0406/593-7418

U.S. Fax: (305) 593-7419

COMMUNICATION SUPPLY, INC.

2531 WEST 60TH PL. SUITE 102

HALEAH, FLORIDA 33016 USA

TEL/FAX: (305) 826-4995



EXPORTADORES DE EQUIPOS Y PRODUCTOS DE
TELEVISION POR CABLE.
PROVEEDORES DE JERROLD/GI Y COMPRESSED LABS.
—ELECTRONICA DE COMPRESION DE VIDEO.—
LLAMENOS HOY!!!



WORLD'S LARGEST DISTRIBUTOR OF
NEW AND RECONDITIONED JERROLD EQUIPMENT
WISHES TO PURCHASE YOUR EXCESS INVENTORY OF

Converters, Headend, & Line
Equipment from all Manufacturers.

STOCKING DISTRIBUTOR FOR

Jerrold • Comm/Scope • Scientific Atlanta • Cablematic • Lectro • etc.

Modern on premise reconditioning facility
ensures factory specifications.

Over 15 Years of Dependable Service!

VueScan Inc. • 1143 West Newport Center Drive

Deerfield Beach, Florida 33442 • USA

(800) 327-4966 • (305) 427-5000 • FAX (305) 427-0934

WHOLESALE CATV EXCESS EQUIPMENT

• Brokers • Brokers • Brokers • Brokers •



510-226-4940

(USA) 800-227-1200

(USA) FAX 510-651-8545

Exclusive Dealer Pricing

dB-tronics

Cable Television Equipment
Sales & Service Center

Check Us Out For

**Scientific
Atlanta**

Parts & Services

- ✓ Discounts on Genuine Parts
- ✓ Up/Down & Module Repair
- ✓ 450 & 550 MHz Equalizers
- ✓ Inband Converter Repair

CALL OR FAX US FIRST

Telephone: 803-574-0155

USA Toll Free: 800-356-2730

Fax: 803-574-0383

Now Accepting

VISA

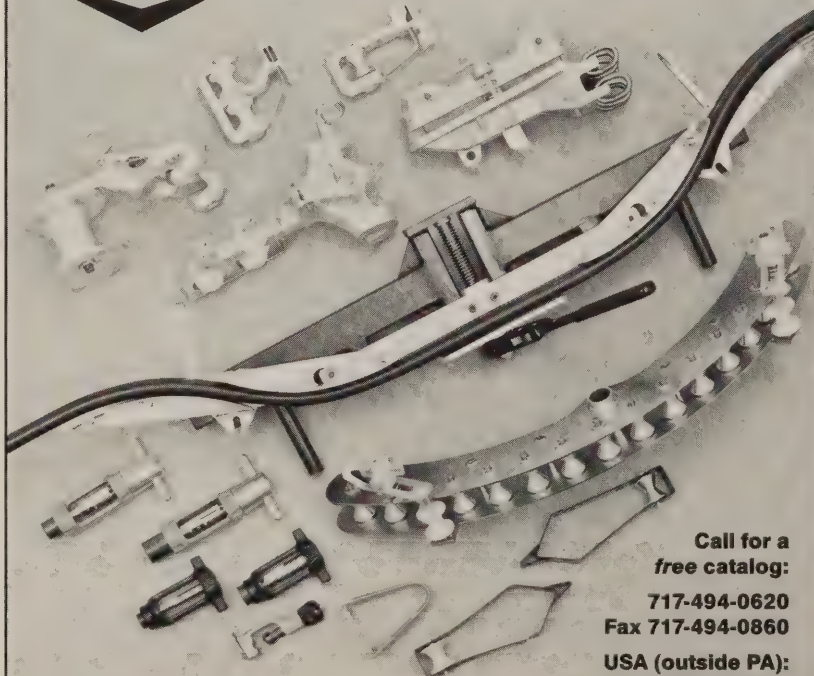
Master

dB-tronics, Inc.
145 Tradd Street
Spartanburg, SC 29301
USA

get converted!

LEMCO

the tools of the trade



Call for a
free catalog:

717-494-0620

Fax 717-494-0860

USA (outside PA):

1-800-233-8713

for hybrid fiber/coax construction

**DON'T GAMBLE ON
CONVERTER REPAIR!
HAVE IT REBUILT BY**

the
CableShopper
inc.

**DOESN'T YOUR CABLE SYSTEM DESERVE THE
CABLESHOPPE DIFFERENCE!
CALL NOW! (518) 489-2100 FAX: 518-489-0269
ALBANY, N.Y. USA**

THE CABLESHOPPE

THE OTHER GUYS

Mandatory Upgrades
(meet or exceed OEM specs)
Free Pick-up and Delivery
2 week Turn Around
Flat Rate Billing
(most models)
One Year Warranty
(on most models)
Refresh NVM's (SA units)
Refresh Braindeads
(DP5 through DPBB-7)
Rebuild SA 8570.90 and 8600's
Barcode Addressable Units
Line Equipment Repair
Sells Rebuilt Converters
Buys Your Obsolete Equipment

YES!
YES!
YES!
YES!
YES!
YES!
YES!
YES!
YES!
YES!
YES!
YES!

Sorry!
Sorry!
Well, we'll try.
Yes! Plus parts.
Are you kidding!!
Do what?
What's that?
Sorry can't do 'em
Maybe.
Can you afford it?
Sometimes.
It depends.



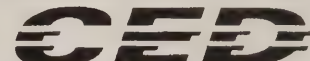
MULTICOM, INC.

ONE STOP FOR CABLE TV EQUIPMENT

- BLONDER TONGUE
- PICO MACOM
- SCIENTIFIC ATLANTA
- HOLLAND ELECTRONICS
- TIMES FIBER
- SADELCO
- HEADEND EQUIPMENT
- COAX CABLE
- AMPLIFIERS
- FIELD STRENGTH METERS
- CONNECTORS
- TAPS & PASSIVES

USA (407) 331-7779 • FAX (407) 339-0204 • 800-423-2594

**MANUFACTURERS OF
TELECOMMUNICATIONS
EQUIPMENT**



QUALITY TRANSMISSION SYSTEMS

- UHF / MMDS
- LOW POWER
- LOW COST
- RACK MOUNT
- ALL SOLID STATE TECHNOLOGY
- COMPACT, MODULAR DESIGN
- COMPUTERIZED CONSTRUCTION
- HIGH SIGNAL POWER

Amplifiers • Modulators • Upconverters • Exciters

Office: (305) 633-8020 Fax: (305) 635-5445
2500 N.W 39 th Street • Miami, Florida U.S.A. 33142



NCS INDUSTRIES INC.
20 Years of Service
PAL Agile Demodulators

Jerrold

S890D-C 48.25 to 855.25 MHz \$834.⁰⁰
48.75 to 855.75 MHz

S890D-B/G 48.25 to 855.25 MHz
or 49 to 854 MHz \$834.⁰⁰

S890D-I PAL I \$834.⁰⁰

S890D-D PAL D \$834.⁰⁰

Olson Technology B/G, I, D

OTD-3000 PAL 48.25 to 855.25 MHz \$668.⁰⁰

LCD-500 PAL 54 MHz to 300 MHz
470 MHz to 890 MHz \$492.⁰⁰

USA 800-523-2342 Fax: 215-657-0840
Cebu, Philippines W.C.I.
Phone/FAX 633-246-1561



NCS INDUSTRIES INC.
20 Years of Service
PAL Agile Processors

Jerrold

S450P-C 48 to 446 MHz \$1030

Olson Technology

OTR-3000 PAL D, B/G, I \$1049.⁰⁰

LCP-500A PAL D, B/G, I \$609.⁰⁰

LCP-500H PAL D, B/G, I \$824.⁰⁰

Headend Combiner

Jerrold-HC-12X \$165.⁰⁰
Olson-OTHC-12 \$154.⁰⁰

USA 800-523-2342 Fax: 215-657-0840
Cebu, Philippines W.C.I.
Phone/FAX 633-246-1561

- Subscriber Management
- Pay-Per-View
- Billing
- Integrated ARU
- Addressable
- Work Order Scheduling



Cable Works

(501) 741-1616 fax (501) 741-2984

For
information
and
evaluation
system please
call.



NCS INDUSTRIES INC.
20 Years of Service
PAL Agile Modulators

Jerrold-High Performance

C6MP-I 48 to 600 MHz \$2199.⁰⁰

C6MP-B/G 48.25 to 591.25 MHz \$2199.⁰⁰

C6MP-D/K 48.75 to 591.25 MHz \$2199.⁰⁰

PAL-MOB option board \$367.⁰⁰

S450M-B/G 48.25 to 447.25 MHz \$888.⁰⁰

S450M-D 48.25 to 551.25 MHz \$888.⁰⁰

S450M-I 48.25 to 447.25 MHz \$888.⁰⁰

S550M-C 48.25 to 551.25 MHz \$888.⁰⁰

240 volt option \$67.⁰⁰

Olson Technology

High Quality Agile PAL Modulators

PAL B/G, I, D Standard

OTM-3000-PAL 47 MHz to 450 MHz \$729.⁰⁰

LCM-500-PAL 48.25 to 445.25 MHz \$515.⁰⁰

LCM-500-H-PAL 48.25 to 445.25 MHz \$563.⁰⁰

Typical Output 60 dbmV

LCM-600-PAL 3 Modulators 1 Rack Package \$1219.⁰⁰

48.25 to 445.25 MHz

55 dbmV Combined Output

USA 800-523-2342 Fax: 215-657-0840
Cebu, Philippines W.C.I.
Phone/FAX 633-246-1561

TM BROKERS

Since 1988

- Sylvania
- Scientific -Atlanta
- Magnavox
- Jerrold

- DC's
- Taps
- Linegear
- Connectors
- Headend Equipment

USA Phone: (208) 683-2797
(208) 683-2019
Fax: (208) 683-2374

EXPORT SPECIALIST

Fair Prices • Good Equipment
References Available

PRODUCTS



Satellite receiver

The MT900 Intercontinental domestic and international satellite receiver, designed for use in broadcast, SNG, special network and CATV systems, was introduced by the Satellite and Broadband Products Division of Standard Communications Corp.

The unit features a fully synthesized PLL tuning circuit, with digitally locked continuous tuning AFC and micro-processor control. The C/Ku-band 950-1,750 MHz RF input is dual-converted to an industry standard 70 MHz IF. The unit can be used for rebroadcast in any area around the world, from almost any satellite format, according to the company.

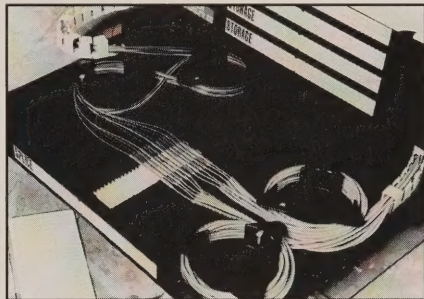
The core RF circuitry is based on the company's Agile Omni satellite receiver design, additionally incorporating other

technologies such as digital AFC, real-time carrier-to-noise meter, multistandard video/audio and space-saving SMD construction. The company says its receiver ensures signal purity and baseband technical excellence with virtually all international satellite signals for rebroadcasting or original master videotaping.

The unit complies with RS250C, CCIR and Intelsat's satellite standards through extensive tuning and alignment on a reference satellite link simulator. Increased burn-in, component matching and a printout of video performance are provided for customer review.

The unit can be ordered without audio to minimize cost in dedicated scrambling systems or with the following options: frequency-agile mono audio demodulator with three adjustable IF filters; frequency-agile dual-channel stereo audio demodulator with five adjustable IF filters; adjustable front panel, multiple SAW-filtered module with six 70 MHz IF bandpass filters; and a wide-band RF tuner module for use in Astra or other 950-2,050 MHz systems.

For more information, contact Bill Meyer, Marketing Communications/Public Relations, Standard Communications Corp., Satellite & Broadband Products Division, P.O. Box 92151, Los Angeles, California 90009-2151, U.S.A.; phone, (310) 532-5300.



Cable management

DT Electronics Ltd. is now promoting fiber cable management systems from U.S.A.-based Telect Inc. The Lightwave Integrated Network cross-connect system (LINXS) is a modular, expandable network for fiber-optic cable interconnection,

BUSINESS DIRECTORY

Watkins COMNET, INC.

WIRELESS EQUIPMENT SPECIALISTS
MMDS • ITFS

\$SAVE\$

In Stock
Tocom 5507MU (New, GI Warranty)
Zenith ST 2601 (Used)

tel (303) 343-8466
fax (303) 343-0129
U.S.A. (800) 243-8466

New/Used
Downconverters
Antennas
Power Supplies



LOMA SCIENTIFIC
INTERNATIONAL

SEEKING INTERNATIONAL AND DOMESTIC
DISTRIBUTORS AND REPRESENTATIVES
FOR MMDS TRANSMISSION SYSTEMS

REPLY TO SALES MANAGER

3115 Kashiwa Street
Torrance, CA 90505

Tel: (310) 539-8655
Fax: (310) 539-8634



Design and Manufacture



**There's a real 1 GHz
taps meet your needs**

TAIWAN CABLE CONNECTION CORP.

FAX#886-2-2480502
3FL., NO. 2, Alley 2, Lane 222, Lien-Cheng Road,
Chung Ho City, Taipei, Taiwan

Reader Service Number 81

termination and storage. It is designed to solve difficult cable management and network access problems. The company says it is ideal for central office, remote terminal and private network fiber systems, and for LAN, CATV, broadcast and data communications.

Features include: total fiber protection, high-capacity distribution for all fiber-optic cables; elimination of crushing, kinking and bend radius problems; entirely modular splice, patch and storage components.

For more information, contact Chris Ward, The Marketing Workshop, Number One, Bilton Road, Rugby, Warwickshire CV22 7AA, U.K.; phone, 0788 574457.

Satellite finder

Antex Electronic Corp. introduced the SF90 satellite finder designed to help make precise dish setup easy. Its sensitivity indicates 0.2 dB level difference in the 950-1,750 MHz range. The unit is small, measures 77 x 60 x 28 mm, and weighs 95 grams. Specifications include 70 ohm impedance, -40 dBm minimum input and -10 dBm maximum input.

For more information, contact Antex Electronic Corp., 263-2, Sec.

1, Chang Nan Road, Chang Hua, Taiwan, R.O.C.; phone, 886-4-732 2561.

Reflectometer

Kathrein-Werke KG announced the MIK 21 battery-driven impulse reflectometer for locating breaks in cable networks. The unit locates inconsistencies and reflection points in cables and interfaces, and calculates their distance from the point of measurement.

Failures appear as positive (high ohm) or negative (low ohm) deflections on the Y-axis of the display. Setting the cursor on an indicated reflection position will give a distance reading in meters. The unit has four ranges (in meters): 0-10, 0-100, 0-500 and 0-1,000. Cable dielectric values for different cables can be set between 0.01 to 0.99 (preset to 0.67). The unit features resolution of 1.6% of measurement range and low weight of 0.75 kg, including carrying case and batteries. Also included is a 75 ohm cable.

For more information, contact Kathrein-Werke KG, Postfach 10 04 44, D-83004 Rosenheim, Germany; phone (49) 8031 184439.

TDR

CM Technologies unveiled the PCI-3100, which the company says is the first personal computer-based metallic time domain reflectometer (TDR). With the unit, any laptop, portable or desktop PC with a full-sized 16-bit ISA slot can acquire high performance, high resolution TDR cable waveforms.

With a fast measurement rate of 6.4 giga-samples per second, the unit has a maximum range of 96,000 feet and can resolve defects to within one inch. The card also comes complete with a data acquisition and analysis software package for either DOS or Windows.

The software allows the user to save and recall TDR waveform files for future comparison of up to eight user-selected overlays in the overlay mode, and the ability to zoom-in on any portion of the waveform in six steps up to 64x for detailed analysis. The number of waveforms that can be saved is limited only by the amount of disk space available.

For more information, contact CM Technologies Corp., PC Instruments Division, 1026 Fourth Avenue, Coraopolis, Pennsylvania 15108, U.S.A.; phone, (412) 262-0734.

CALENDAR

Nov. 30-Dec. 2: Cable & Satellite Asia '94, Hong Kong. Contact Reed Exhibition Companies, (44) 21 705-6707.

Nov. 30-Dec. 2: Western Show, Anaheim Convention Center, Anaheim, California, U.S.A. Contact (510) 428-2225.

Dec. 1-3: MIP Asia, Hong Kong Convention & Exhibition Centre, Hong Kong. Contact Reed Midem Organisation, 33 (1) 44 34 44 96.

Jan. 4-6: Emerging Technologies conference, Orlando, Florida, U.S.A. Contact the U.S. Society of Cable Television Engineers, (610) 363-6888.

Jan. 11-14: Caribbean Cable TV Association conference, Casa de Campo, Dominican Republic. Contact Margaret Dean, (809) 775-4099.

Jan. 21-24: Middle East Broadcast '95, Bahrain International Exhibition Centre. Contact Overseas Exhibition Services Ltd., (44) 71 486 1951.

Jan. 21-24: MECOM '95, Bahrain International Exhibition Centre. Contact Overseas Exhibition Services Ltd., (44) 71 486 1951.

March 20-22: Pan-Asia Satellite & Cable TV conference and exhibition, Hong Kong Convention and Exhibition Centre, Hong Kong. Contact AIC Conferences, (852) 520 1481.

April 3-5: Cable & Satellite '95, Grand Hall, Olympia, London. Contact Reed Exhibition Companies, (44) 081 948-9800.

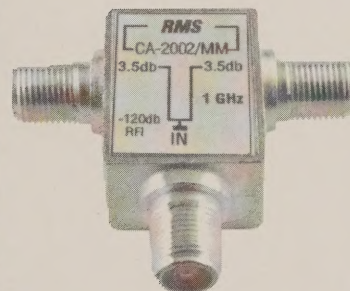
INDEX

RS#	Advertiser	Page#	RS#	Advertiser	Page#
83	ADC Telecommunications	27	64	Norwegian Broadband	24
14	Alpha Technologies	15	32	Pacific Monolithics	37
73	American Broadcast Systems	21	67	PDX	31
66	Antex	30	6,84	Phillips Broadband Networks	22,23
69	Cadco	46		Phasecom	84
—	Caribbean Show	88	68	Pico Products	29
79	Coast CATV	72	47	Power Guard	7
75	Communications & Energy	53	5	R.L. Drake	59
63	Conifer	34	76	RMS Elcetrionics	95
58	Digicomm	8	25	Scientific Atlanta	96
38	Discovery Channel	13	46	SCTE	48
12	DX Communication	25	1	South Wold	52
61	Eastern	51	72	Standard Communications	9
70	Ecosphere	47	7	Superior Electronics	41
89	Electroline	83	93	Tektronix	10,11
—	Eurodec	49	50	Taiwan Cable	93
62	Favorlangh	16	81	Times Fiber	35
42	General Instrument	19	11	Transelectric Co.	5
85	HUA-U	75	4	Trilithic	17
74	Holland	52	34	Trilogy	3
20	Hughes AML	43	3	Viewsonics	60
45	Jebsee	61	48	Viewstar	16
—	Mar Del Plata	55	59	Vuescan	69
80	Mega Hertz	78	60	Wavetek	71,84
16	Microwave Filter	33	55,87	Winner Sat	77
—	Napte	87	49	World Congress	67
86	Nexus	39	—		
87	Nokia	81			

In Concert With Cable For Over Fifty Years And Growing.



RMS Electronics, Inc. has over 50 years experience in manufacturing electronic devices and quality CATV products. The RMS product line includes over 400 components that are used in the construction or rebuilding of cable television systems.



*Build your system for the future,
with high quality and reliability
from RMS Electronics.*

RMS Electronics, Inc. tiene más de 50 años de experiencia en la fabricación de aparatos electrónicos y productos de televisión de cable. La gama de productos de RMS abarca más de 400 componentes que se utilizan en la construcción o acondicionamiento de los sistemas de televisión de cable.

Desarrolle un sistema del futuro con la alta calidad y confiabilidad de RMS Electronics.

A RMS Electronics, Inc. possui mais de 50 anos de experiência na fabricação de dispositivos eletrônicos e produtos CATV da mais alta qualidade. A linha de produtos da RMS inclui mais de 400 componentes utilizados na construção ou reforma de sistemas de televisão por cabo.

Monte o seu sistema para o futuro, com a mais alta qualidade e confiabilidade da RMS Electronics.

RMS Electronics, Inc. má více než 50ti letou zkušenost ve výrobě elektronických zařízení a kvalitních CATV výrobků. Sortiment produktů firmy RMS zahrnuje přes 400 komponentů, kterých se užívá při konstrukci a přestavbě kabelových televizních systémů.

Vybudujte svůj systém pro budoucnost pomocí vysoké kvality a spolehlivosti firmy RMS Electronics.

RMS 电子公司在制造电子设备 及高质量有线电视产品方面具有 五十年以上经验。RMS 公司的产 品线包括用于有线电视系统的兴建 与改造方面 400 多种零部件。

请采用 RMS 电子公司高质量 的可靠产品，建立起贵公司适用于 将来的系统。



41-51 Hartz Way • Secaucus, NJ 07094
In New Jersey Call Collect (210) 601-9191
FAX (201) 601-0011 • Toll Free (800) 223-8312

United Kingdom

RMS, UK

Phone: (0256) 881-525
FAX: (0256) 882-866

Switzerland

Erivision

Phone: 062/71 11 34
FAX: 062/71 48 19

Argentina

Super Cable S.R.L.

Phone: (541) 433-2427
FAX: (541) 433-0297

Israel

Rotal Communication

Phone: +972 3 5596480
FAX: +972 3 5596484

Romania

TVS Holding

Phone/FAX: 40-991-35319

THE FOCAL POINT FOR CONVERGENCE



SCIENTIFIC-ATLANTA

At Scientific-Atlanta, we're developing some of the most advanced interactive multimedia communications products in the industry. From MPEG-based digital set-tops to interactive network systems architectures, Scientific-Atlanta leads new product development efforts for a broad range of exciting, multimedia delivery services.

As a result, we offer a wide array of broadband communications capabilities addressing the following areas:

- MPEG Digital Set-Top Terminals
- MPEG Digital Video Compression
- Integrated Headends
- MPEG Digital Storage and Retrieval
- Fiber Optics
- Distribution Equipment
- Telecommunications
- Interdiction Systems
- Digital Audio Systems

For more information call: (404)903-6327
Eastern Europe, Middle East, Africa, Pacific Rim:
(404)903-6701
Fax inquiries: (404)903-5375

**Scientific
Atlanta**